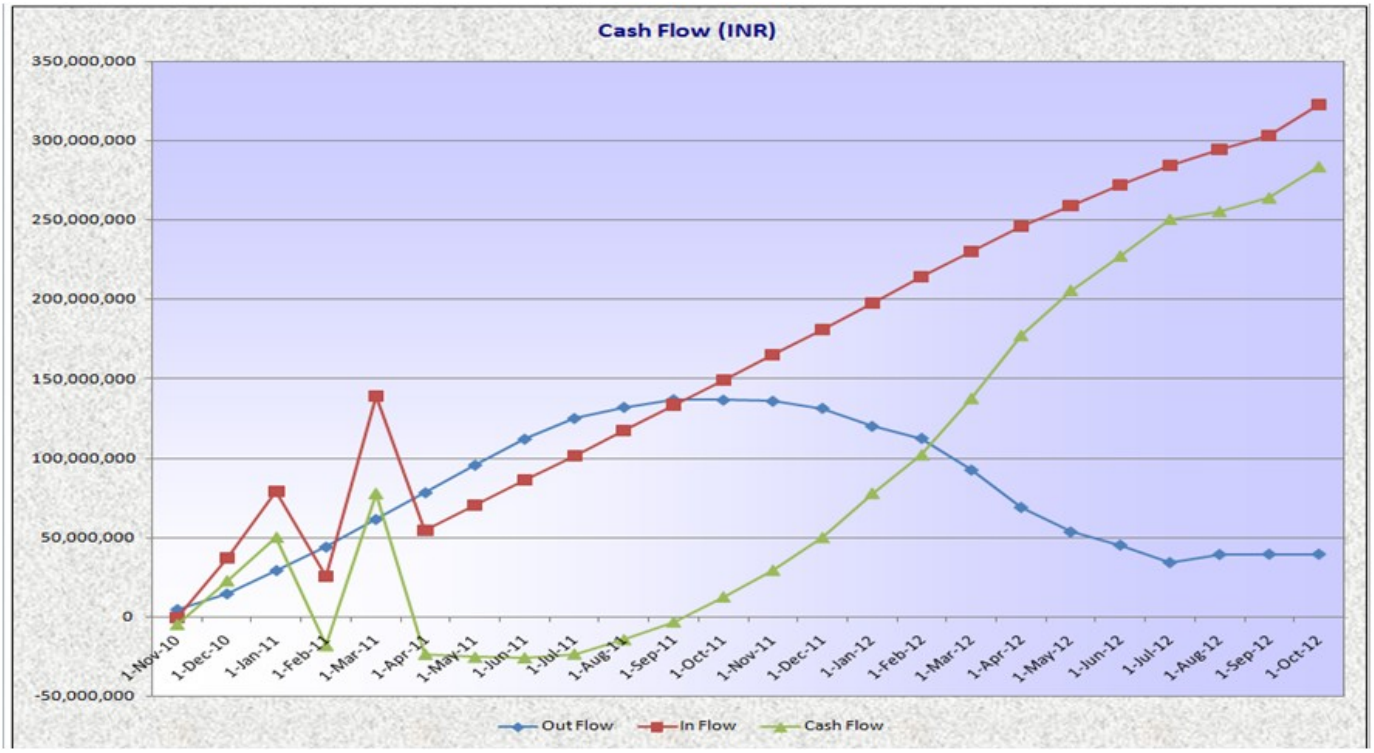
AEC LOGIC PVT LTD

PROBID+ DOCUMENTATION & USER MANUAL

Rate Analysis, Budgeting and Scheduling Program

Yudhishtirudu Gaddipati

03-Jul-13



An advanced budgeting and scheduling program to plan enterprise resources for construction projects employing complicated resources like machines, material, manpower and subcontracts

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ProBID+ Documentation & User Manual

2 Program Concept

1. ProBID+ is a budget application to quickly prepare construction project rate analysis necessary to procure project bids and/or execute. The application is meant for companies/clients engaged in construction using most complicated resource deployment. The application can also be used for small projects on non-construction functions to create an MS Project files to schedule and monitor resource based projects.

2. Construction industry needs Rate Analysis application as many engineer weeks of time is required for estimating cost of a projects using software applications available in the market or using Excel. It may be necessary to calculate direct cost based on the fast changing market resources. Most firms engaged in construction obtain subcontract price or adopt a standard schedule and add their mark up to estimate cost. This most times misleads to lose business opportunities and make losses. Alternatively time consumed is enormous in working out rates with conventional tools like Excel spreadsheets.

3. Comprehensive checks to make project risk management are possible with ProBID+. The data can easily communicate with ERP applications for project wide procurement, material management, accounting apart from integrating with AutoCAD, MS Project to as part of main project management.

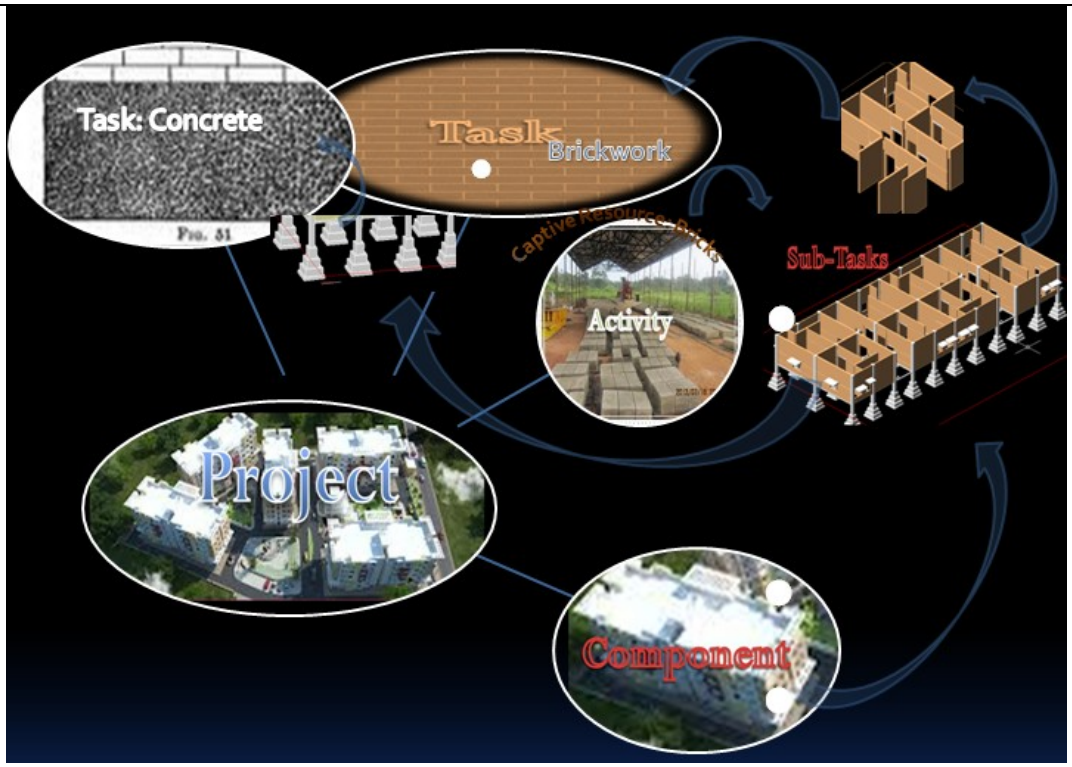
4. To facilitate such enriched features the ProBID$^+$ is designed bringing to an end to all those cumbersome processes, the construction industry is facing today.

2.1 Project & Task Relation

5. **Project**: A facility to be created by a sponsor or client to be executed either by him or by employing a contractor. A project needs to be broken down (WBS) to asses cost or making contract between parties as a measure between the parties.

6. **Tasks/Project WBS**: Identifiable work activity of a project or WBS of the project to be executed by employing certain resources. In other words task is that - what we produce, or sell or service or manufacture by employing Resources.

7. Any project's Work - Break - Structure (WBS) is Bill of Quantities and defined in the ProBID$^+$ as Tasks. Tasks are selected or built in the Compose/Build Form and are analyzed in the Analysis Form by assigning resources to each of them. Once all the Tasks are assigned with Resources the ProBID+ file is ready for data analysis, presentation, management and exporting to the MS Project for scheduling.

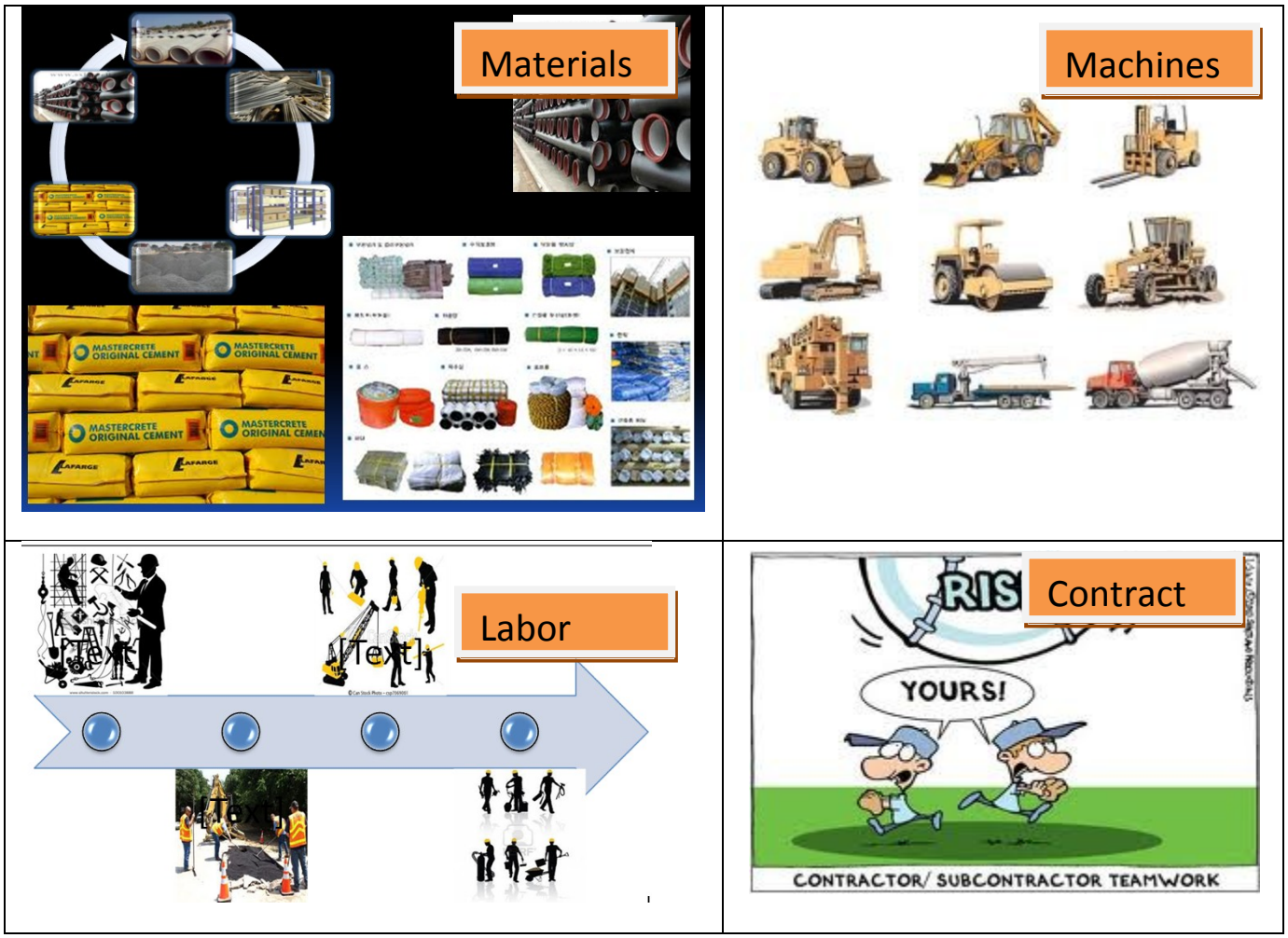


Project & Tasks

2.2 Resources:

8. Every Project Task requires certain Resources to be performed. These Resources are divided in to four categorized - **Labor, Lump sum, Material and Machinery**. In other words, the Resources are those that - what we buy, hire, own. Program assumes that Resources are associated with rates per unit, transportation costs, and taxes and so on.

9. Labor resource is also called Manpower, while Lump sum resource is called at time Money resource or LS, or contract or /subcontract as per convenience.



2.3 Assignments:

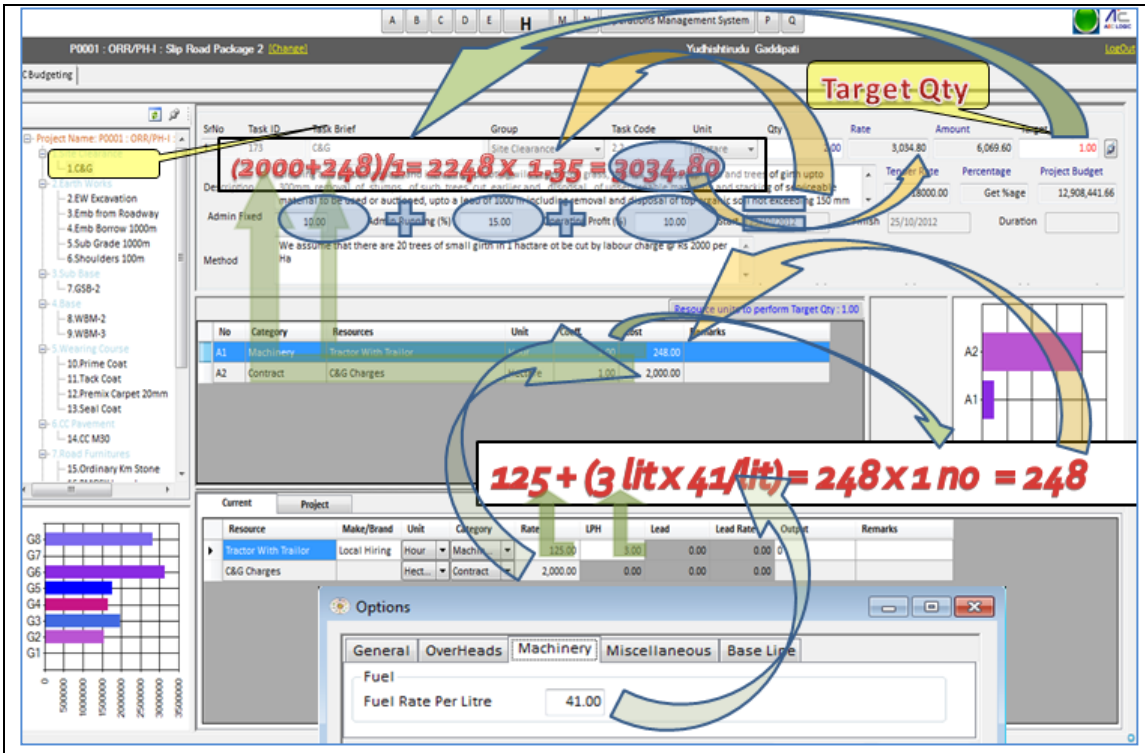
10. Adding or engaging some predetermined doses of Resources to perform some units of a Task gives us cost of production of that unit Task. Such units/doses of incorporation / association / engagement of resources are generally called norms/coefficients or **Assignments**.

	Assignments = Association of Resources to perform Tasks
	Resources, Work-in-Process and Tasks

2.4 Rate Analysis & Scheduling

11. Association of Resources to Task have complicated calculations while taking into consideration of several critical controlling factors like fuel costs, transportation, administrative costs, markups, indirect costs, depreciation costs, rentals and so on. The program calculates them and reports the way the project is required to perform.

12. Moreover ProBID+ comes with most important features such as entire spectrum of Tasks and Resources can be managed with MS Project, AEC ERP and other cost analyzing processes to estimate project risks.



How Task Rates are calculated by ProBID+

2.5 Construction Activities

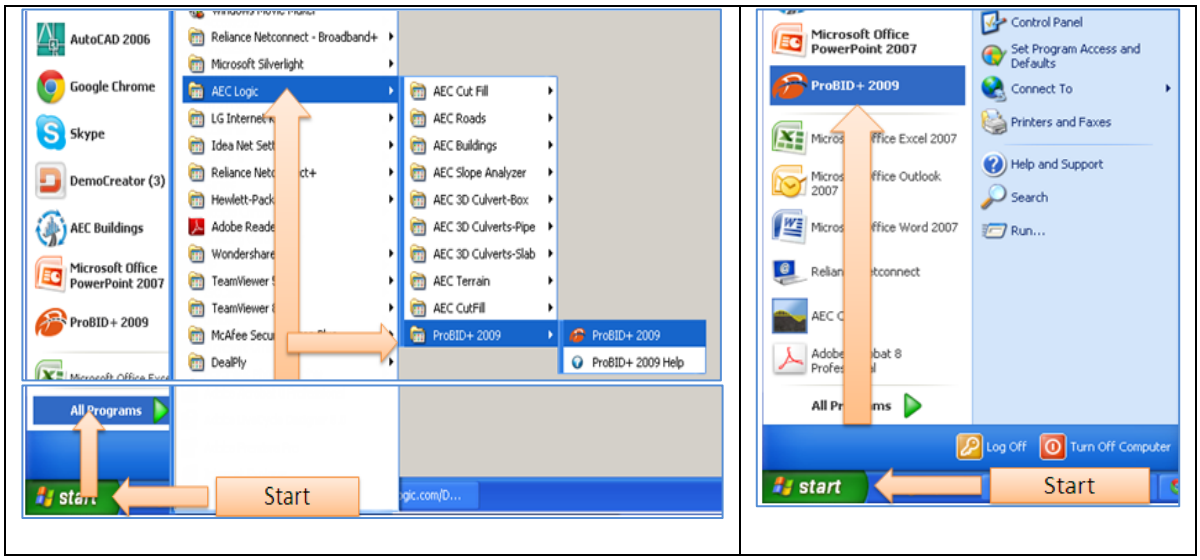
13. Project Tasks and Resources associated can be seen from the following image. User may comprehend correct understanding of the project and performance to arrive at best and economical costs of a project.

2.6 What are all the users to do?

14. Users need to practice chapters on Assignments, Project Scheduling, Costing Tools and Indirect budgeting to arrive a project estimate. Understanding these chapters is most important to estimate cost of a construction projects. Efficiency and experience of users can deliver effective and realistic budgets to assess project costs.

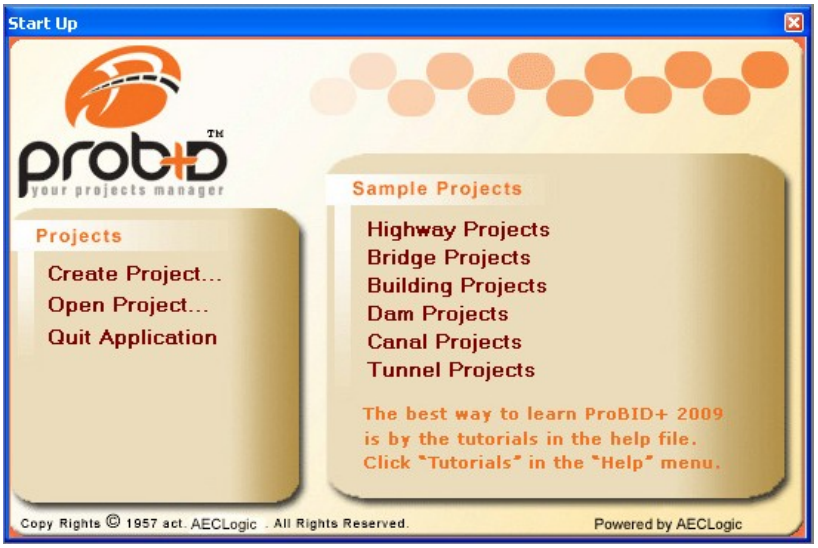
3 Program Start Up

15. Program can be started from Windows >> Start button >> Program files >> AEC Logic folder >> ProBID+ or double the desktop icon if can be viewed.



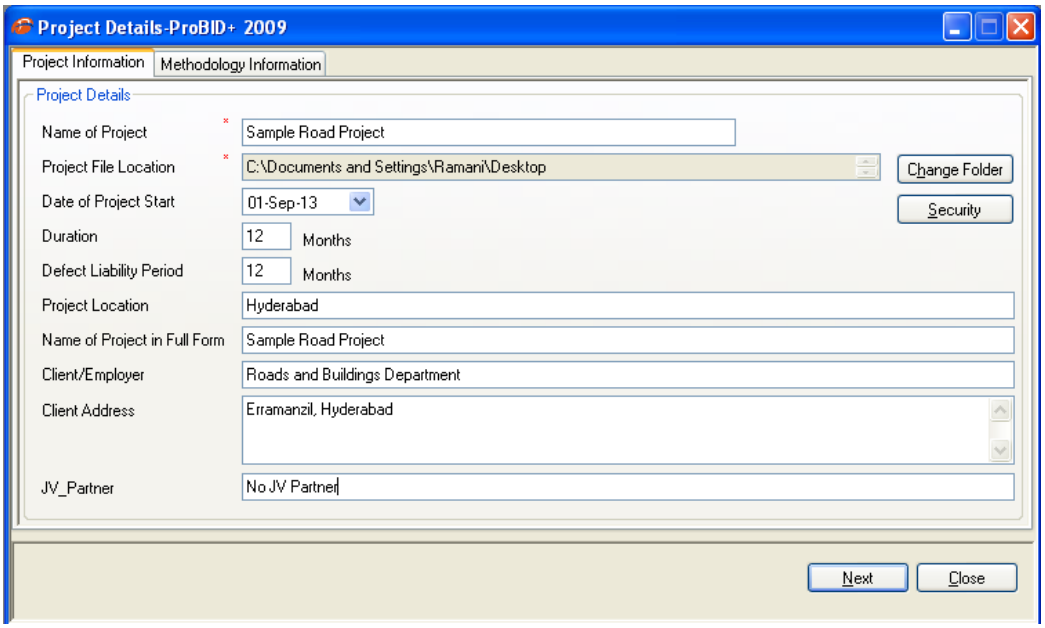
3.1 Click on Create Project on Startup form

16. Program opens a flash shown in the image below. Choose **Create Project** to start a new project or **Open Project** to start working on an existing project or take **Sample Project** to practice.



3.2 Project Information

17. Name of the Project, Project File Location, Date of Project Start, Duration, Defect Liability Period, Project Location, Name of Project in Full Form, Client/Employer, Client Address, JV-Partner field can be optionally be filled by the user to lead the program to use these values at suitable locations to show presentable reports.

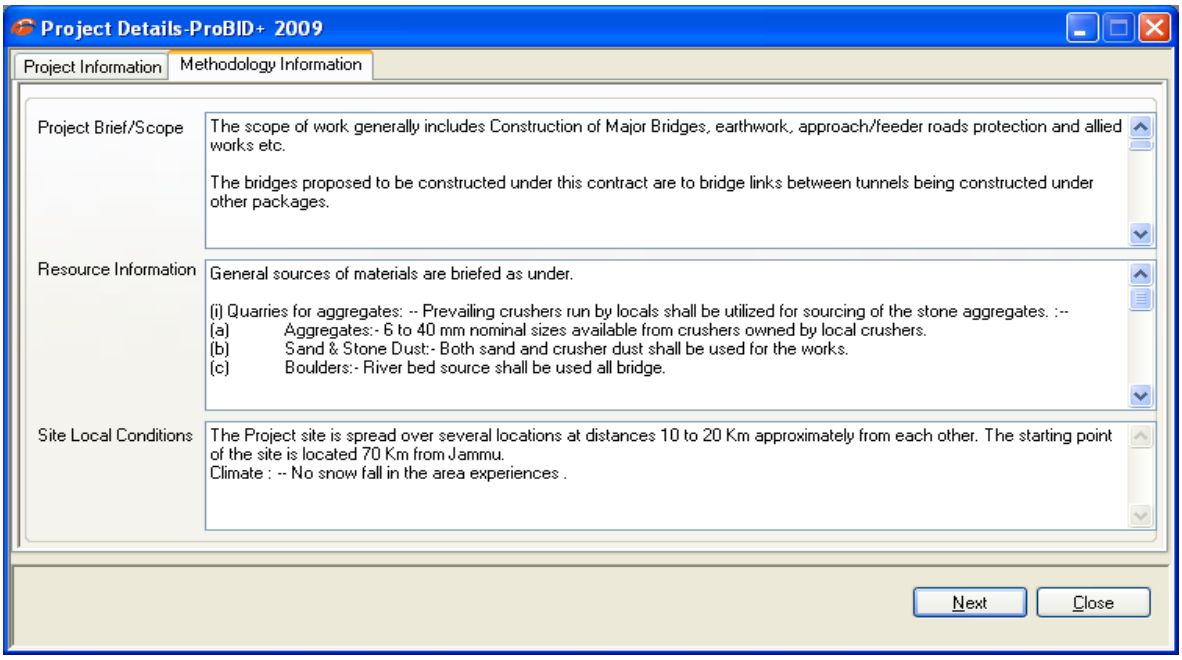


3.3 Methodology Information

18. **Project Brief/Scope:** Full description of the project intended for use in methodology for presentation of tender documentation.

19. **Resource Information:** Resource availability information for the methodology

20. **Site Local Conditions:** The prevailing site conditions to be mentioned in the methodology



3.4 Adding Tasks during start up

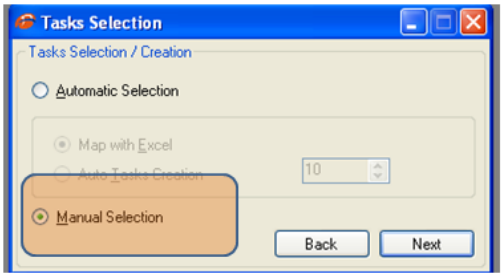
3.4.1 Automatic Selection

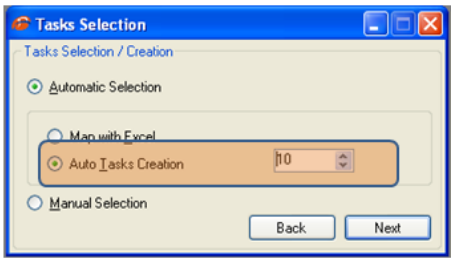
3.4.1.1 Map with Excel:

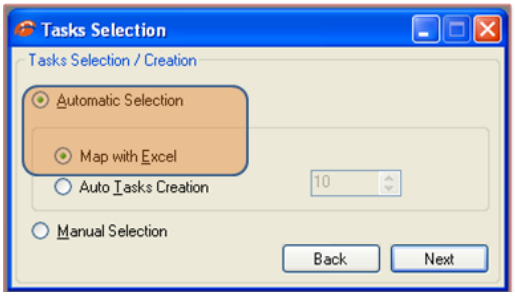
21. Program is capable of imparting / mapping tasks from already existing EXCEL sheet. This feature is explained in the next chapter

3.4.1.2 Auto Task Creation:

22. Choose *'Auto Task creation'* radio button and select number of BOQ items required in the project. On giving required number of BOQ items the program adds such number of dummy BOQ items. These can be edited in place to suit to project.







3.4.2 Manual Selection

23. This topic is dealt in the next chapter

3.4.3 Available Templates Projects

24. ProBID+ comes with several sample real time tested projects. Data has been changed to hide identity and actual bidding strategy of the project tenders.

    a. Highway Projects:

    b. Bridge Projects

c. Building Projects

d. Dam projects

e. Canal Projects

f. Tunnel Projects

25. Keep saving your project analysis file regularly. If you've made changes to a project and have not yet saved them, you will be asked if you want to save them.

3.5 About making accurate estimates for Task Item

26. Use your own past experience and experience of others who have done something similar in previous projects. Ask other questions, such as:

    a. How did average output achieve of a Task per hour with a set of available or intended resources?

    b. What were the challenges encountered?

    c. What would you do differently if you had to do it over again?

    d. Note any differences between the new Task Item and similar Task Item or Tasks Items done in the past and take into account those differences when estimating a Task Item's costs.

27. Include the following considerations as you estimate Task Item costs:

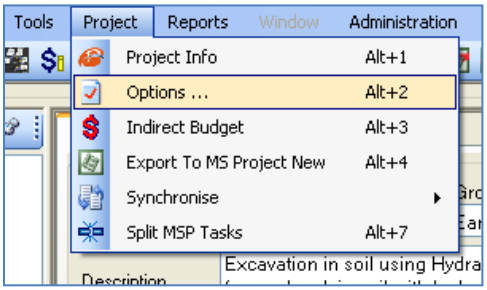
    a. Costs can depend on the experience of the resource performing the Task Item. A new machine resource can sometimes complete certain Task Item or Tasks Items more quickly than the old one.

    b. Estimates should be revised when work starts. You will know more about the Task Item or Tasks Items at that point.

    c. You can also derive your estimates by comparing optimistic, pessimistic, and expected durations. This is sometimes called a PERT analysis.

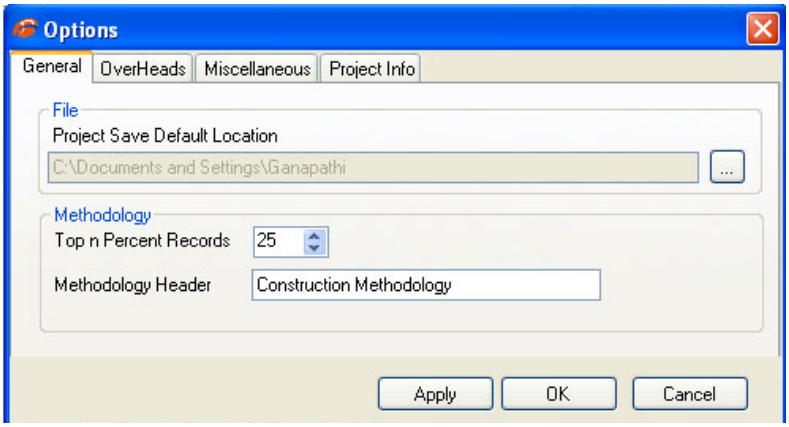
4 Options/Project Defaults

28. Project runs with several centrally controlled values at project level. These values are extremely important that controls cost of the project. User need to understand and practice them to guide the program. These are arranged according to the functional requirements as per the tabs explained below. To reach Options dialog Top menu >> Project >> Options…



4.1 General tab

29. **File >> Project Save default Location:** User needs to set default file location for the program to save project files at this location. The same path shall also be used for writing/saving output MSP, PDF and Excel files being generated by the program during execution.

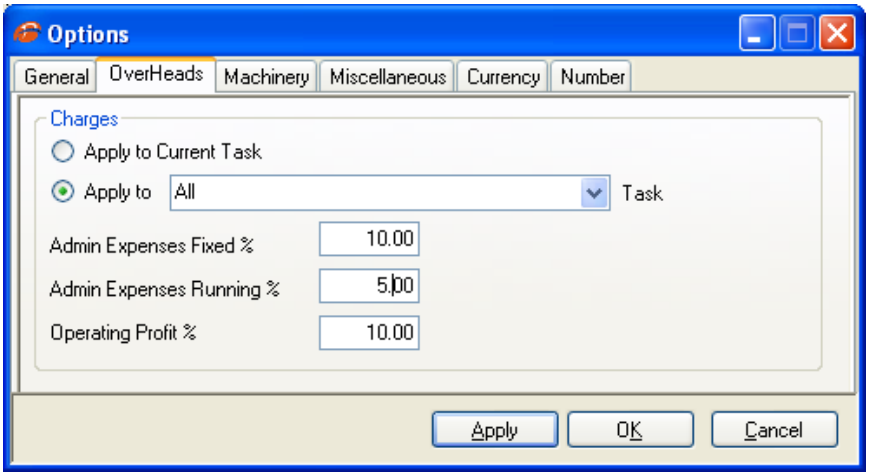


30. **Top n percent records:** Percentage number of top Tasks sorted on cost to generate Methodology based on assignments defined in Assignment table.

31. **Methodology Header:** A default header to indicate in the Methodology report.

4.2 Overheads tab

32. Users can set their values for the program to evaluate rates/costs. These values are applied on the direct costs to arrive at Task Rates.



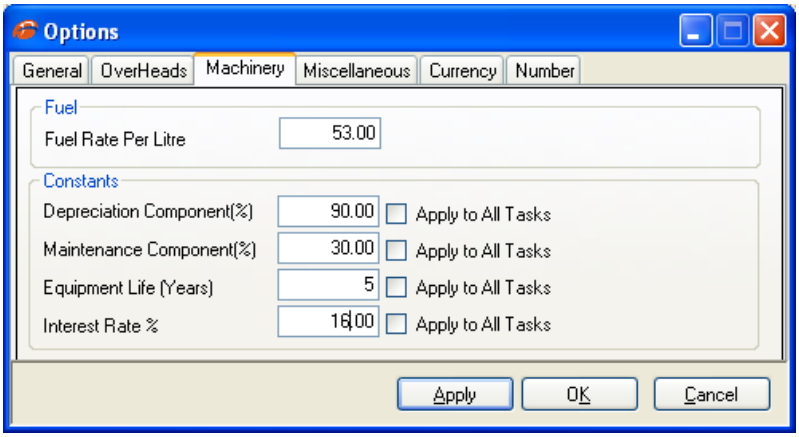
33. **Admin Expenses Fixed%:** A fixed percentage on direct cost to meet expected administrative expenses in executing a project. These costs do not depend on duration of a project.

34. **Admin Running%:** A fixed percentage on direct costs to meet expected administrative expenses in executing a project. These costs depend on the duration of a project and increase with the increase of duration.

35. **Operating Profit/Margin %:** Percentage on the direct cost of targeted Contractors Profit component.

4.3 Machinery tab

36. This is explained in more detailed manner under chapter *Rate analysis/Assignments* under the topic *Machinery Costs*.



4.3.1 Fuel Rate per Liter

37. Fuel is an indirect resource or sub-resource to the main machine resources and its rate is assumed to be common for all the equipment being assigned in a project. User needs to key-in a prevailing market rate that includes all handling charges.

4.3.2 Depreciation Component:

38. A useful component of machine resource after salvage value. This value is generally set at 90% leaving 10% for salvage.

    A = Depreciation Constant x Basic Cost / Life (hr)

    (Example = 90% x 750,000 /10 000 = 67.5)

4.3.2.1 Maintenance Component:

39. An average hourly running maintenance expense of a machine resource to meet expenses towards filters, lubricants and major repairs are estimated at certain percentage of the hourly rate. ProBID+ by default assumes this value as 0.3 or 30% of the hourly usage rate.

    B = Maintenance Component x Basic Cost / Life (hr)

    (Example = 30% x 0.9 x 750 000 /10 000 = 20.25)

4.3.2.2 Equipment Life (Years):

40. Normal Equipment life in years that a machine is expected to achieve to return purchase value and interest costs before it becomes unviable.

4.3.2.3 Interest Rate %:

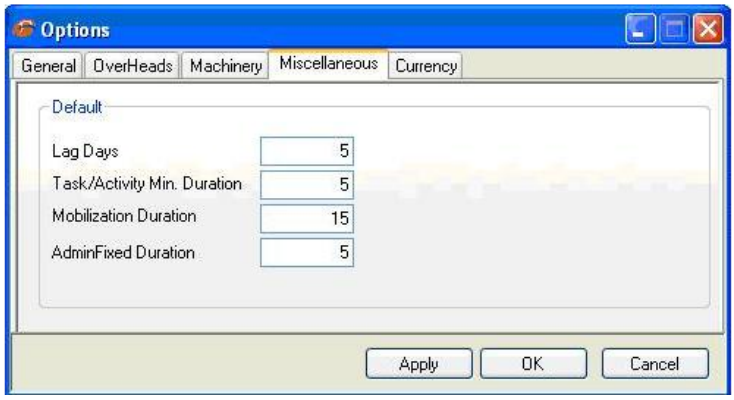
41. Yearly simple finance interest rate on a machine purchased though finance. ProBID+ assumes that machinery resources assigned to tasks have calculated rental values in comparison to market rates or standard rates per hourly usage. The calculated rental values include interest component on an average market depreciation/interest rate apart from hourly owned cost.

    C = {{Basic Cost x [1 + (Interest Rate / 100)] ^ Equipment Life in Years} – Basic Cost}/ Life (hr)
    (Example = {{750 000 x [1+ (16/100)] ^ 5} – 750 000}/10 000 = 82.53)

42. All above values A + B + C aggregate to machinery usage costs that ProBID+ allocates for each Task while arriving Rate.

4.4 Miscellaneous tab

43. This is explained under the chapter *scheduling with MSP* under the topic Miscellaneous Options.

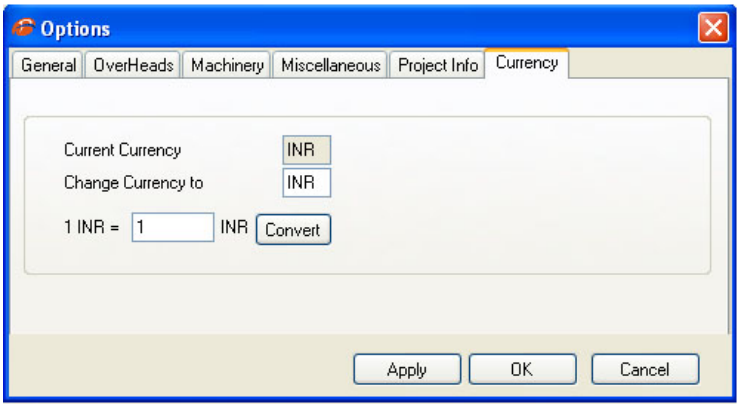


4.5 Currency Tab

44. **Current Currency:** The currency in which the ProBID+ Resource costs are valued or keyed in.

45. **Change Currency:** The currency in to which user wishes to covert the whole resource costs for the ProBID+ to do it for you.

46. 1 USD = Currency conversion rate to be keyed in for the ProBID+ to convert your data.



5 Tasks/WBS/BOQ Items

5.1 Terminology

47. **Task**: An identifiable work activity of a project or a WBS of the project to be executed by employing/incorporating certain doses/usages of resources. All tasks costs together in a project represent the whole direct cost of the project.

48. **Group**: Group (Section) of Tasks can be set as detailed in Standard Specifications

49. **Task No:** A reference identification number of each Task in the original document provided by the Client /Employer in their documents. This facilitates easy referencing to the original Client /Employer document.

50. **Unit:** A measure of a particular Task.

51. **Project Quantity:** Number of units of a Task to be executed in a project as provided by the Client/ Employer estimate or imported from other AEC CAD based products or assessed by the user.

52. **Rate:** The analyzed rate per unit quantity of a Task item arrived thorough analysis by ProBID^{+}.

53. **Amount:** The product of Rate and Quantity.

54. **Description:** Task description is a write up that covers brief specification / description and scope of work for such Task.

55. **Assignment Table**: A data grid where the user assigns Resource Coefficients to perform a set of Task units set in Target Qty.

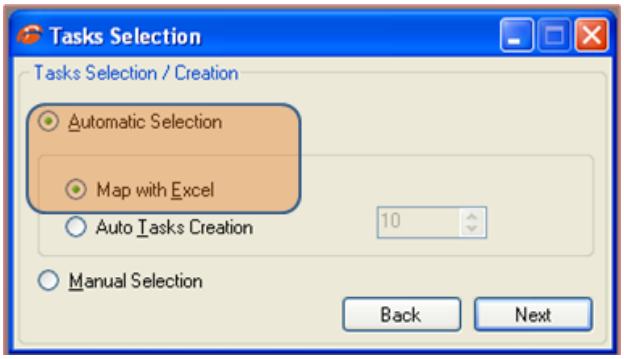
56. **Method:** An operational description of a Task or method of arriving or assumptions made in estimating the Task with a view to write additional text in the methodology report. This shall supplement auto generated text by the ProBID^{+}.

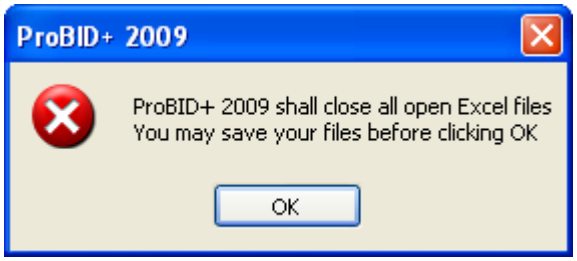
5.2 Adding Tasks: Map Excel

5.2.1 Excel Data Source

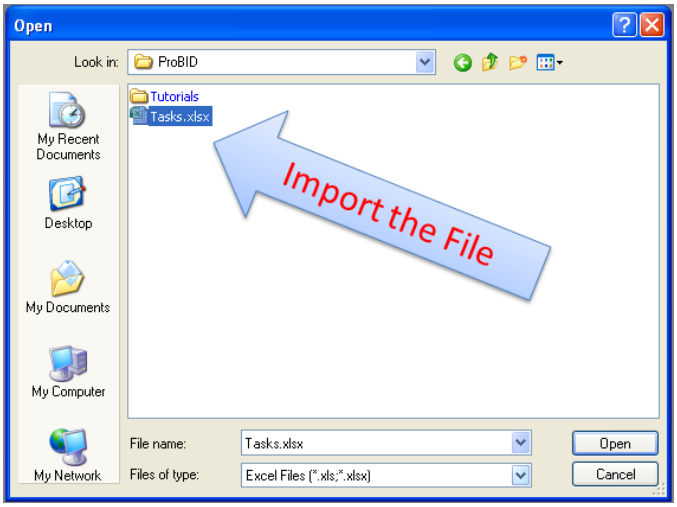
57. Most information regarding Tasks is generally available in Excel format. This information could be mapped without typing them in to the program. ProBID+ comes with excellently designed feature to map such information to reduce considerable man hours. This can be done from the Startup form shown below.

58. Users need to format irregularly typed Excel spread sheet Tasks to bring them to generally acceptable formats shown under. The formatted Tasks may need certain corrections/modifications to be carried out in the excel sheet created by the ProBID+. Users also need to keep the Tasks in a serial number created by ProBID+. After formatting and manual editing, if necessary is done, data is imported.





59. Click Next to choose Excel file



60. Most commonly acceptable Excel file formats without any pre-formatting. ProBID+ reads the quantity field first and builds the description, units and other information in upward and downward searching methods till it gets information. Multiple cell information is concatenated / appended to the previous cell information.

J18

	A	B	C	D	E	F	G	H
1	S.No	Task Ref	Section/ Group	Activity Brief	Description	Unit	Quantity	Rate
2	1	2.2(i)	Site Clearance	C&G	Clearing and grubbing road land including uprooting wild vegetation gra	Hectare	2	18000
3	2	3.5 (iii)	Earth Works	EW Excavation	Excavation in soil using Hydraulic Excavator and Tippers with disposal	Cum	1642.53	106
4	3	3.4 (i)	Earth Works	Emb Borrow 1000m	Construction of Embankment with Material obtained from Borrow Pits	Cum	6000	114
5	4	3.14 (ii)	Earth Works	Sub Grade 1000m	With 1000 m Lead	Cum	3700	113
6	5	4.1 (ii)	Sub Base	GSB-2	Granular Sub-base with Well Graded Material (Table 400.1) aggregate	Cum	1473.96	1500
7	6	4.8 (2)	Base	WBM-2	Water Bound Macadam with Crushable Screening WBM Grading 2 Pr	Cum	372.94	2350
8	7	4.8 (3)	Base	WBM-3	Water Bound Macadam with Stone Screening WBM Grading 3 Provid	Cum	372.94	2300
9	8	5.1 (i)	Wearing Course	Prime Coat	Prime Coat Providing and applying primer coat with bitumen emulsion	Sqm	4972.5	60
10	9	5.2 (iii)	Wearing Course	Tack Coat	Tack Coat Providing and applying tack coat with Bitumen emulsion (R	Sqm	4972.5	17
11	10	5.9 (I)	Wearing Course	Premix Carpet 20mm	20mm thick Open-Graded Premix Carpet using Bituminous (Pentration	Sqm	4972.5	232
12	11	5.12 (ii)	Wearing Course	Seal Coat	Seal Coat Providing and laying seal coat sealing the voids in a bitumin	Sqm	4972.5	65
13	12	6.4(i)	CC Pavement	CC M30	Cement Concrete Pavement M - 30 Construction of un-reinforced, dov	Cum	676.6	5000

	A	B	C	D	E	F
9	1) Road Portion					
10	*Sl. No.*	*Description*	Quantity	Unit	Rate in Rs.	Amount in (Rs)
11	1	2	3	4	5	6
12		**Earth Work**				
13	1.00	Earth work in Box cutting in shoulders in hard soil (vide classification of soil item b ….. Do …. All complete job as per specification and direction of E/I	66798.23	per cum	50.00	3339911.48
14	2.00	Construction of embankment with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacting to meet requirement of table 300-2.	294498.55	per cum	190.00	55954724.50
15	3.00	**Construction of Embankment with Material Deposited from Roadway Cutting**				
16		Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.	66798.23	per cum	50.00	3339911.50
17		**G.S.B. & Base Coarse**				
18	4.00	Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	61136.03	per cum	1300.00	79476839.00
19	5.00	**Wet Mix Macadum**				
		Providing, Laying spreading and compacting graded stone aggregate to Wet Mix Macadam specification including premixing the materials with water wet OMC in mechanical mix plant, carriage of mixed materials by tipper to site, laying in uniforme layers with paver in sub base course on well prepared	28883.18	per cum	1500.00	43324770.00

	A	B	C	D	E	F	G	H
1	Group	S. No.	SSR Item No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
2	(A) PREPARATORY WORK AND							
3		1	1.16	Construction of Benchmark and Reference Pillars as per specification and drawing 200.1 & 200.2				
4				(i) Construction of Reference Benchmark	KM.	4.3	1,946.65	8,351.13
5				(ii) Construction of Working Benchmark	KM.	4.29	901.00	3,865.29
6		2	2.20					0.00
7				Clearing and grubbing road land including uprooting wild vegetation grass, bushes, shrubs, saplings and trees of girth upto 300mm, removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per technical specification clause 201. and direction of E/I				0.00
8			(A)	In area of non-thorny jungle	HACT	3.00	16,021.13	48,063.39
9		3	2.3(B)					0.00
10				Cutting of trees, including cutting of trunks, branches and removal of stumps & roots, refilling, compaction of backfilling and stacking of serviceable material by manual means with all lifts as per Technical Specification Clause 201. and direction of E/I				0.00
11				Girth above 300 mm to 600 mm	Each	0.00	0.00	0.00
12				Girth above 600 mm to 900 mm	Each	14.00	168.42	2,357.88
13				Girth above 900 mm to 1800 mm	Each	2.00	308.12	616.24
14				Girth above 1800 mm to 2700 mm	Each	0.00	0.00	0.00
15		4	2.6 (D)					0.00
16				Dismantling of existing structures like culverts, bridges, retaining walls and other structures comprising of masonry, cement concrete, woodwork, steelwork including T & P and scaffolding whereever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serveciable material with all lifts and leads of 1000 m as per technical specification clause 202. and direction E/I	Cum	605.00	105.79	64,002.95
17	(B) EARTHWORK							0.00
18		5	3.5 (iii)	**Excavation in soil using Hydraulic Excavator and Tippers with disposal upto 1000 m**				0.00
19				Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades, and cross sections and transporting to the embankment location with a lift upto 1.5m and lead upto 1000 m as per technical specification clause 302.3 and direction of E/I	Cum	120.86	39.11	4,726.83
20		6	3.30	**Construction of Embankment with Material obtained from Roadway cutting**				0.00
21				Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of tables 300.1 and 300.2 as per technical specification clause 301.5 and direction of E/I	Cum	1,315.15	27.87	36,653.23
22		7	3.40	Construction of Embankment with Material obtained from Borrow Pits (4000 m lead)				0.00

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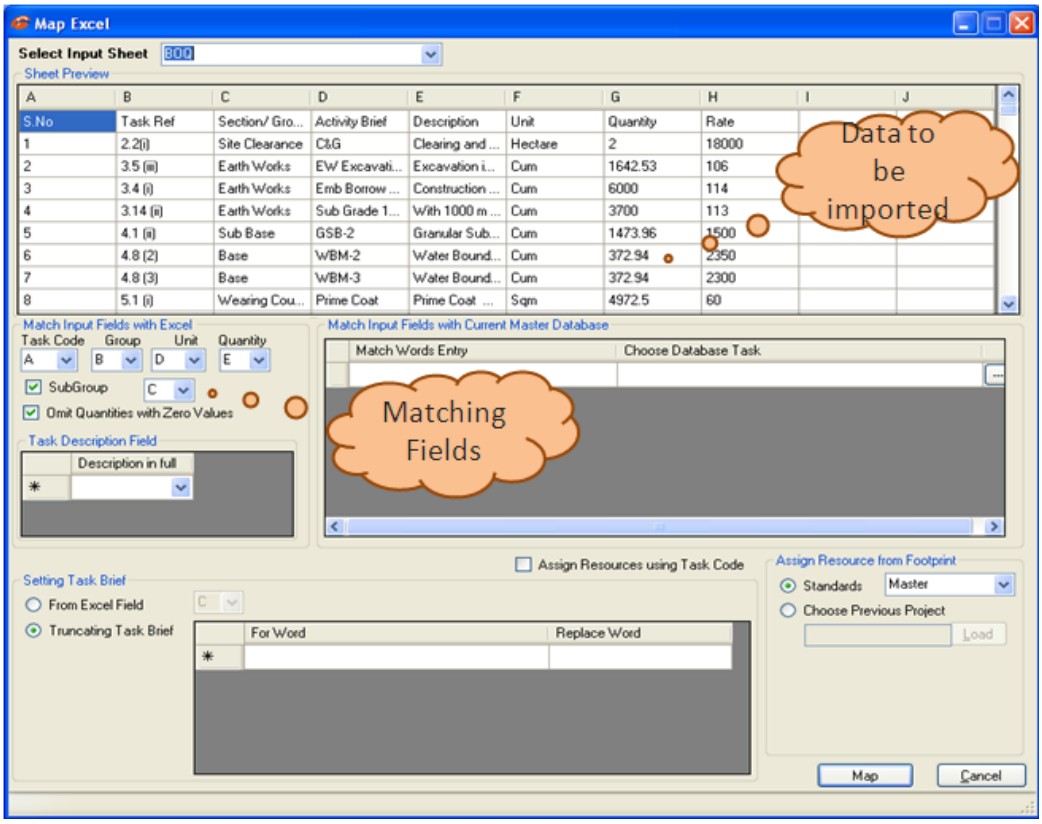
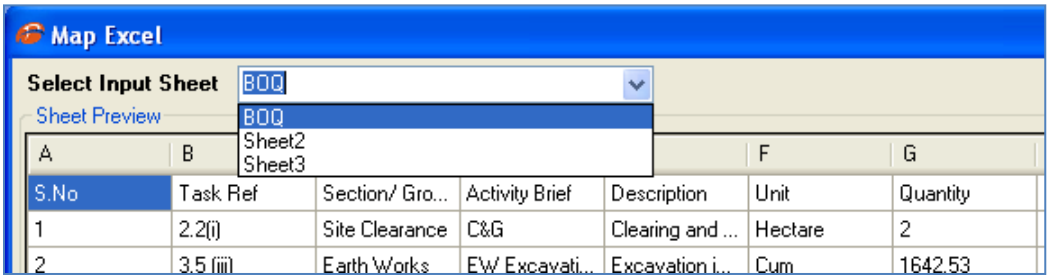
5.2.2 Importing process

61. ProBID+ pops up with the following Map Excel form after the above step with the current sheet data information.



5.2.3 Select Input Sheet

62. The selected Excel file sheet is seen here with the field's labels as typed in existing Excel sheet. All that is required to do is mapping the existing fields of Excel to the ProBID+ fields as under.



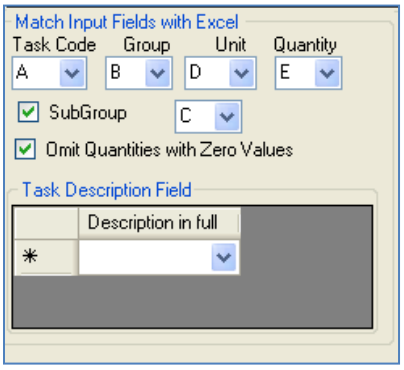
5.2.4 Data in the selected sheet

Sheet Preview

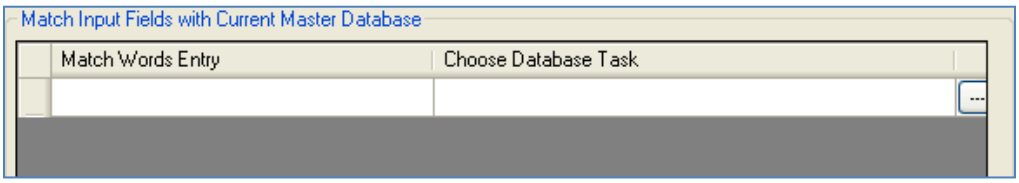
A	B	C	D	E	F	G	H	I
S.No	Task Ref	Section/ Gro...	Activity Brief	Description	Unit	Quantity	Rate	
1	2.2(i)	Site Clearance	C&G	Clearing and ...	Hectare	2	18000	
2	3.5 (iii)	Earth Works	EW Excavati...	Excavation i...	Cum	1642.53	106	
3	3.4 (i)	Earth Works	Emb Borrow ...	Construction ...	Cum	6000	114	
4	3.14 (ii)	Earth Works	Sub Grade 1...	With 1000 m ...	Cum	3700	113	
5	4.1 (ii)	Sub Base	GSB-2	Granular Sub...	Cum	1473.96	1500	
6	4.8 (2)	Base	WBM-2	Water Bound...	Cum	372.94	2350	
7	4.8 (3)	Base	WBM-3	Water Bound...	Cum	372.94	2300	
8	5.1 (i)	Wearing Cou...	Prime Coat	Prime Coat ...	Sqm	4972.5	60	

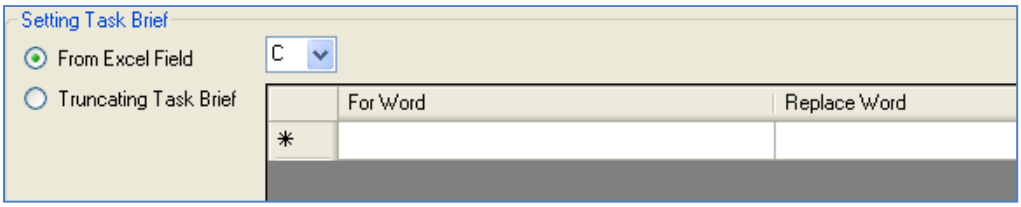
5.2.5 Match/Map the Program fields with Excel fields

63. Task Code/Task Ref/Item Code, Group, Unit, Quantity, and Description are already explained above. Description field may flow from combining from two or more fields. Therefore program needs indication of those multiple fields



64. **<u>Task Brief:</u>** See definition in Terminology chapter. User can automate building suitable Task brief name. This could be built by the program with match words feature or choose from data database task or from Excel field or by truncating the exisiting filed by replacing words as given.



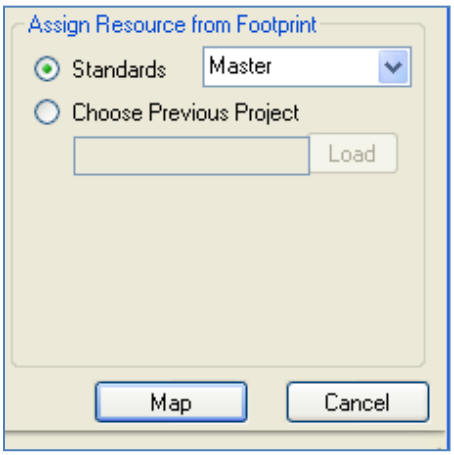


65. **Truncating Task Briefs**: You can truncate full Task Descriptions to abbreviate or elongate Task Briefs with designated texts. You can add or delete items to the list to automate your work with ProBID+. Program replaces/adds all the *For Words* with *Replace Words*. For **Example** - Reinforced Cement Concrete can be replaced with RCC.

5.2.6 Automatic Assignments

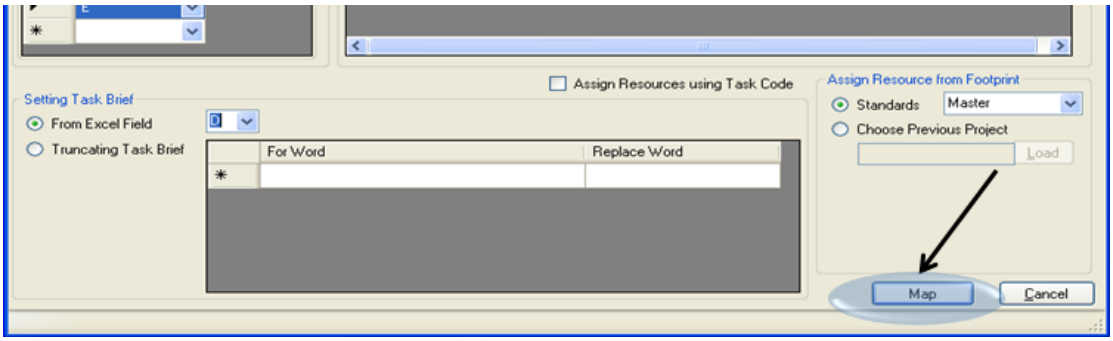
66. **Assign Resource from Foot Print**: You can set your project Tasks automatically get assigned with resources from a Master Database or From a Existing Project as a footprint. This feature is very faster to set resources automatically if you have number of similar projects in a similar area.

67. Program is capable of assigning resources from the Standards or from previously analyzed projects as the case may be. Choose the option the project requires.

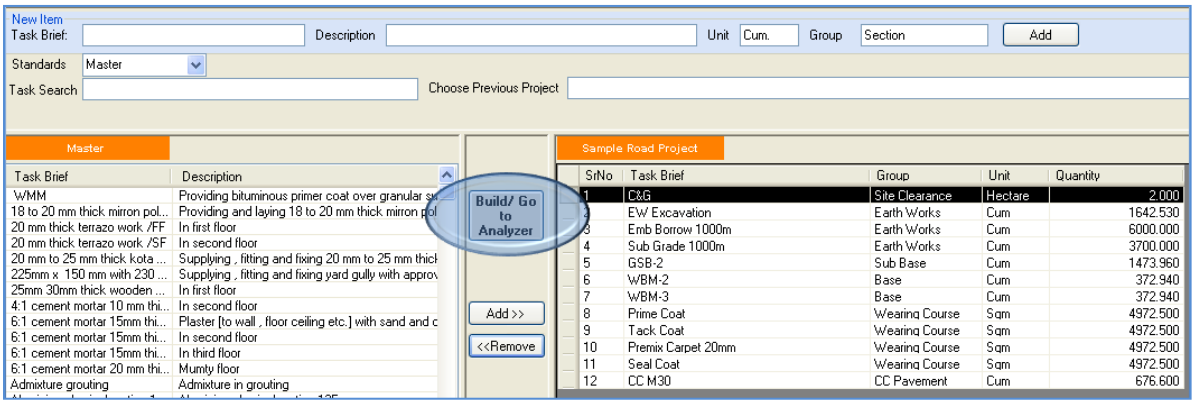


5.2.7 MAP to Import Excel file

68. Finally the Tasks land up in the program build form

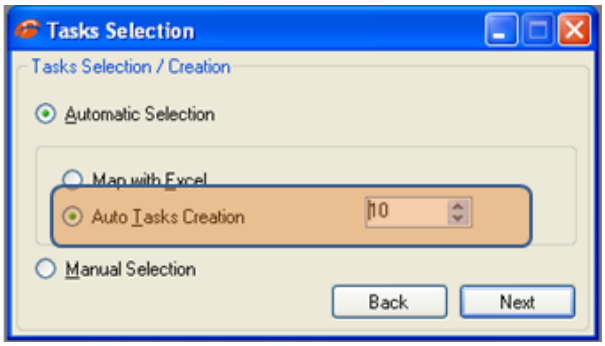


69. The imported tasks can be seen in the image below. Dealing further on these imported Tasks, go to the chapter **Assignments** / **Rate analysis**.

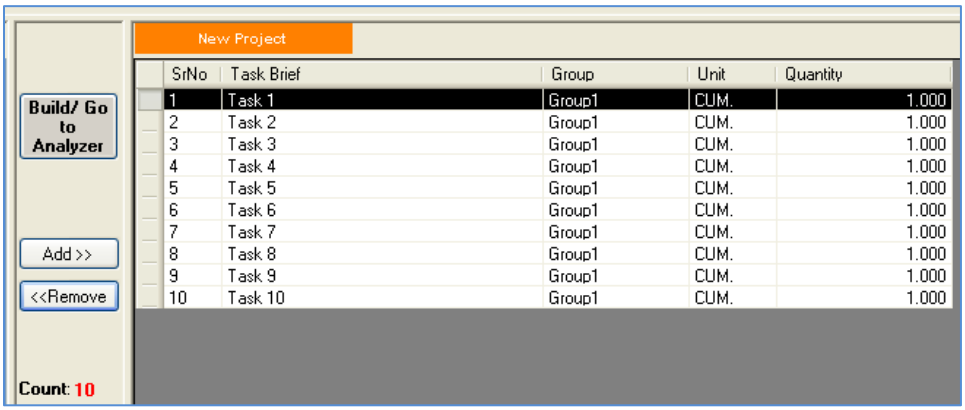


5.3 Adding Tasks: Auto Task Creation

70. This feature simply creates '***n***' number of tasks to initiate the project. User needs to rename them as per project requirements.

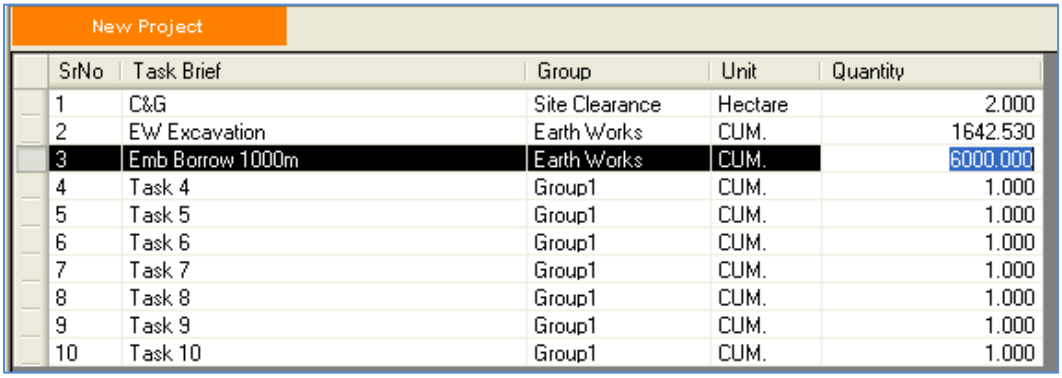


71. The feature builds the following 10 items into the Compose Form as sown below.



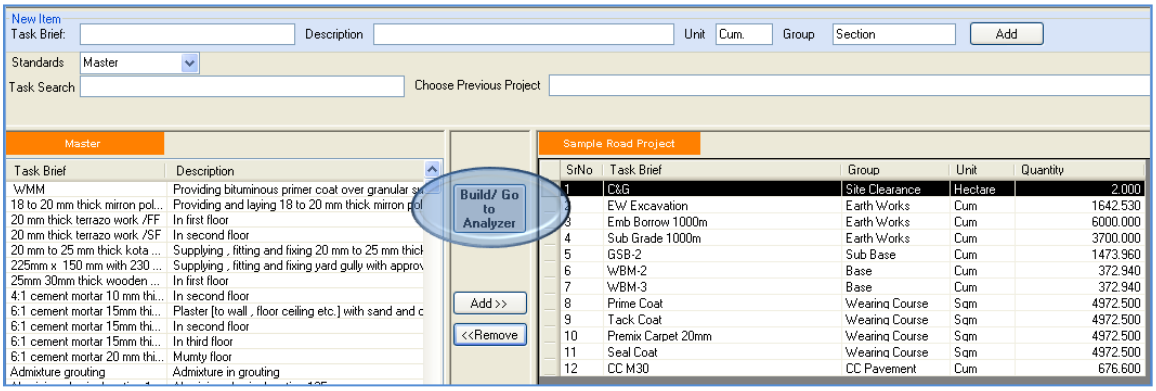
SrNo	Task Brief	Group	Unit	Quantity
1	Task 1	Group1	CUM.	1.000
2	Task 2	Group1	CUM.	1.000
3	Task 3	Group1	CUM.	1.000
4	Task 4	Group1	CUM.	1.000
5	Task 5	Group1	CUM.	1.000
6	Task 6	Group1	CUM.	1.000
7	Task 7	Group1	CUM.	1.000
8	Task 8	Group1	CUM.	1.000
9	Task 9	Group1	CUM.	1.000
10	Task 10	Group1	CUM.	1.000

72. Edit the Task names, Units, Groups etc as may be necessary



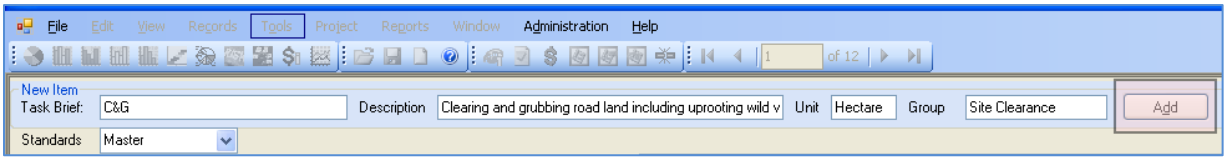
SrNo	Task Brief	Group	Unit	Quantity
1	C&G	Site Clearance	Hectare	2.000
2	EW Excavation	Earth Works	CUM.	1642.530
3	Emb Borrow 1000m	Earth Works	CUM.	6000.000
4	Task 4	Group1	CUM.	1.000
5	Task 5	Group1	CUM.	1.000
6	Task 6	Group1	CUM.	1.000
7	Task 7	Group1	CUM.	1.000
8	Task 8	Group1	CUM.	1.000
9	Task 9	Group1	CUM.	1.000
10	Task 10	Group1	CUM.	1.000

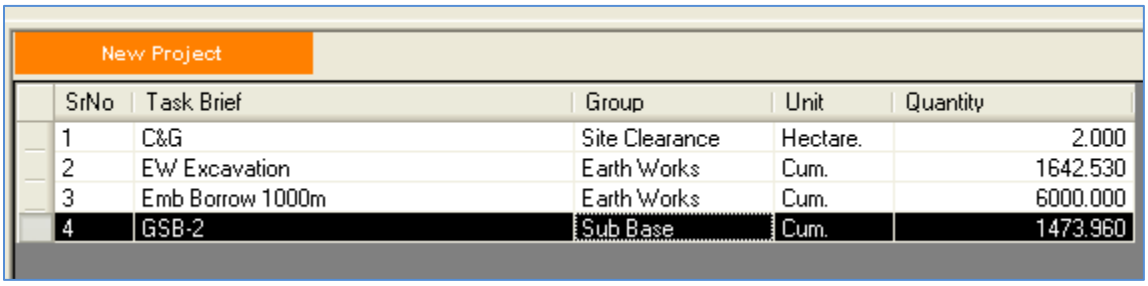
73. Compose Form: Contains two lists, left one with Tasks from Master and the right one the Tasks so imported /added to the current project.

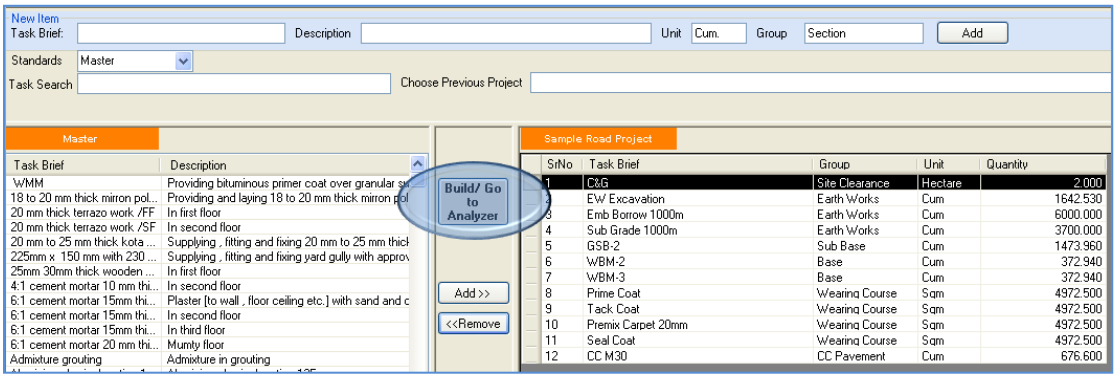


5.4 Adding tasks: Manually

74. Project needs regular task additions and modifications. This is done manually as explained. Type task Brief, Description, Unit, Group as shown below and click Add. This will append to the existing list of items composed under previous processes.

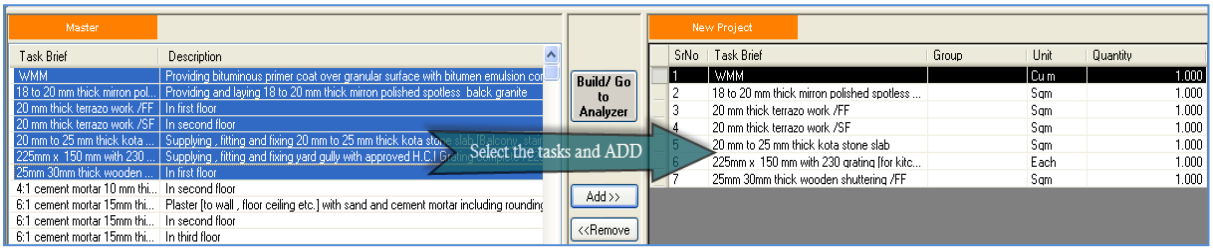




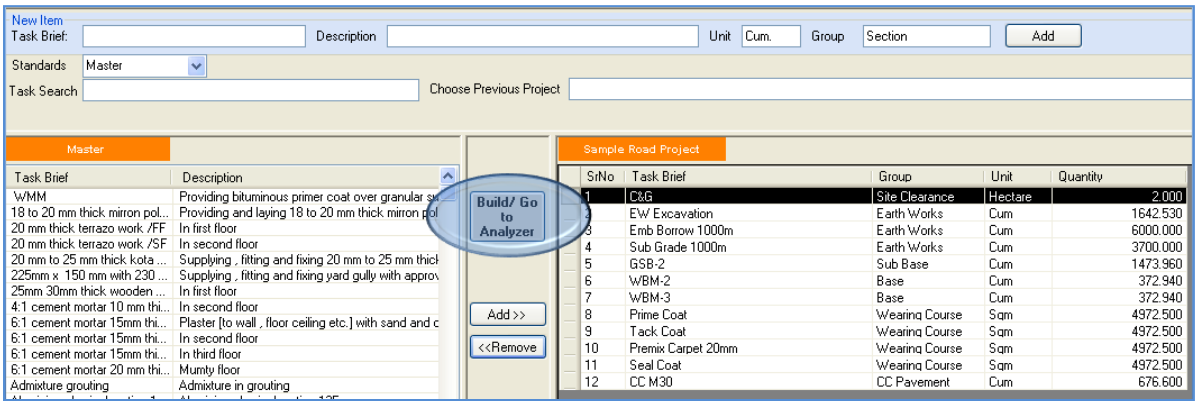


5.5 Adding tasks: from Company Master

75. Company Master is looked up on the left list of the compose form. Project regularly needs to add a Task from the company Master. Choose Tasks and click Add



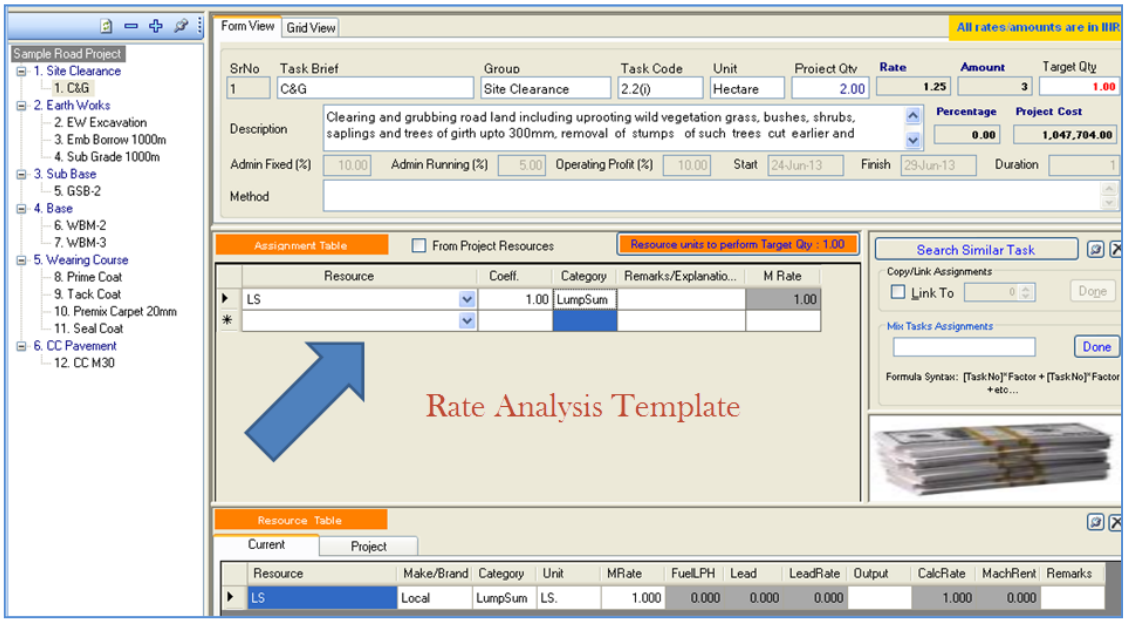
76. The Compose form with newly added tasks looks as under.



5.6 Analysis Form

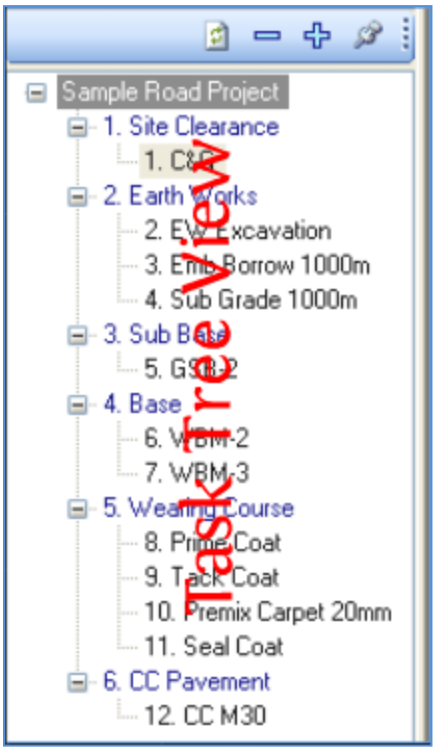
77. Now since the entire project tasks are composed, this is the time to perform Rate Analysis to arrive rates of these tasks.

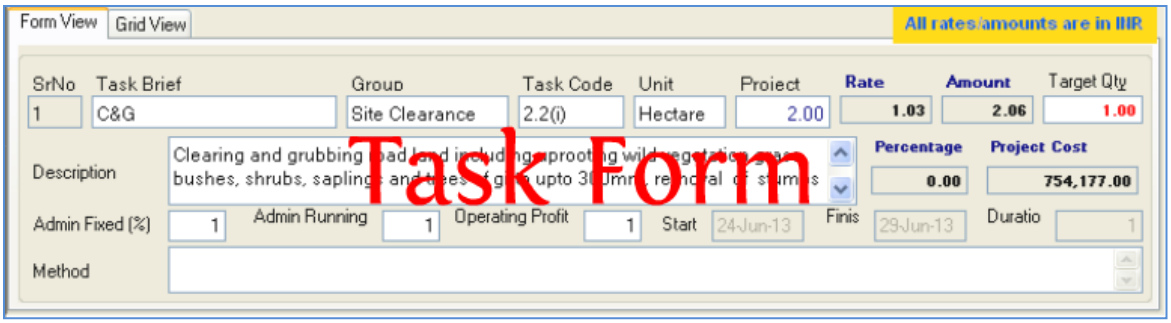
78. Click Build/Go to Analyzer on the Compose form to show up the Analyzer

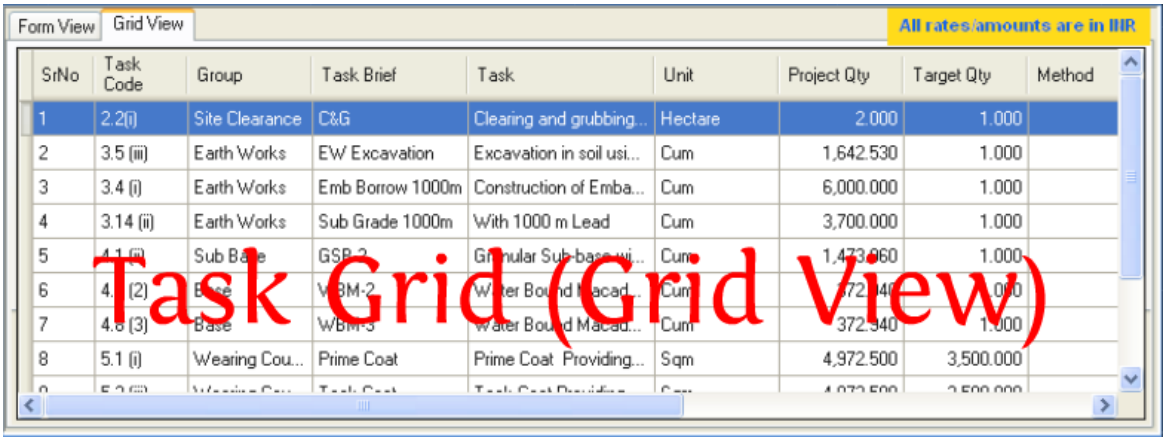


5.7 Navigating tasks

79. Since project contains numerous tasks, navigating them according to functional requirements. Use Tree, grid and form views as the case may be. These are done as shown in the images below.


Sample Road Project
1. Site Clearance
1. C&G
2. Earth Works
2. EW Excavation
3. Emb Borrow 1000m
4. Sub Grade 1000m
3. Sub Base
5. GSB-2
4. Base
6. WBM-2
7. WBM-3
5. Wearing Course
8. Prime Coat
9. Tack Coat
10. Premix Carpet 20mm
11. Seal Coat
6. CC Pavement
12. CC M30
Tree View


Form View
Grid View
All rates/amounts are in INR
SrNo
Task Brief
Group
Task Code
Unit
Project
Rate
Amount
Target Qty
1
C&G
Site Clearance
2.2(i)
Hectare
2.00
1.03
2.06
1.00
Description
Clearing and grubbing
Percentage
Project Cost
0.00
754,177.00
Admin Fixed (%)
1
Admin Running
1
Operating Profit
1
Start
24-Jun-13
Finis
29-Jun-13
Duratio
1
Method
Task Form


Form View
Grid View
All rates/amounts are in INR
SrNo
Task Code
Group
Task Brief
Task
Unit
Project Qty
Target Qty
Method
1 2.2(i) Site Clearance C&G Clearing and grubbing... Hectare 2.000 1.000
2 3.5 (iii) Earth Works EW Excavation Excavation in soil usi... Cum 1,642.530 1.000
3 3.4 (i) Earth Works Emb Borrow 1000m Construction of Emba... Cum 6,000.000 1.000
4 3.14 (ii) Earth Works Sub Grade 1000m With 1000 m Lead Cum 3,700.000 1.000
5 Sub Base Cum 1.000
6 Cum
7 4.6 (3) Base Cum 1.000
8 5.1 (i) Wearing Cou... Prime Coat Prime Coat Providing... Sqm 4,972.500 3,500.000
Task Grid (Grid View)

6 Resources

6.1 Categorization of Resources

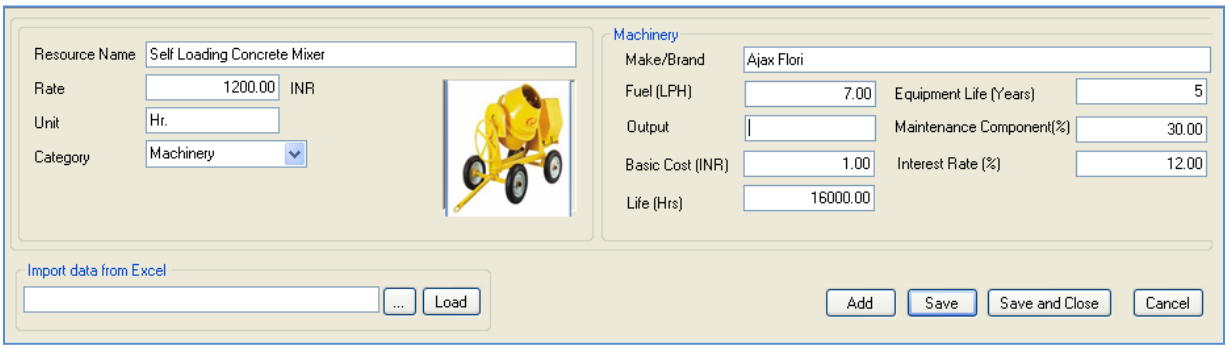
80. These are four categories; Material and Machinery, Labor, Lump sum

6.1.1 Manpower/ Labor:

81. Example resources are skilled, unskilled, semi-skilled and operators etc. Only market rates are required to be entered in to the Rate column. These rates shall include all incidentals like recruitment, bonus, medical etc as per the company's policy. Enter rate, unit, category and click add/save to create.

6.1.2 Machinery

82. Machines like excavators, dumpers, concrete mixer etc are the company assets or machinery resources. Enter fields as shown and click to add/save to create new resource.



83. User needs to key-in various values for this resource type to compare costs of several components to control during project execution.

84. Make & brand, fuel consumption, life and basic costs are the direct resource costs. These costs enable project to have likely costs to be incurred. Fuels consumption costs are having global influence in project cost controls.

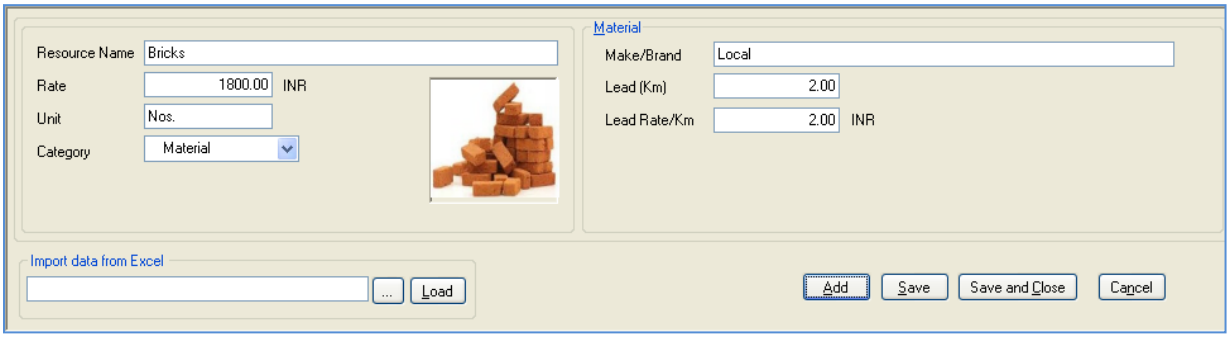
85. Hourly life of the machinery also plays important role to arrive at hourly costs for comparison to market rentals. This information enables the company to take a decision whether to own it or hire it. General life span of machinery is considered in arriving at the calculated hourly rental of machinery for only comparison sake. However these values do not impact the project costs unless they are reflected in the Market Rate column.

86. The equipment yearly life, Interest rate on investment /Internal Rate of Return (IRR) on investment made and maintenance component are assumed to be the global constants by ProBID^{+}. These values are listed in Tools Options menu for editing and applying for entire fleet of machinery.

6.1.3 Material

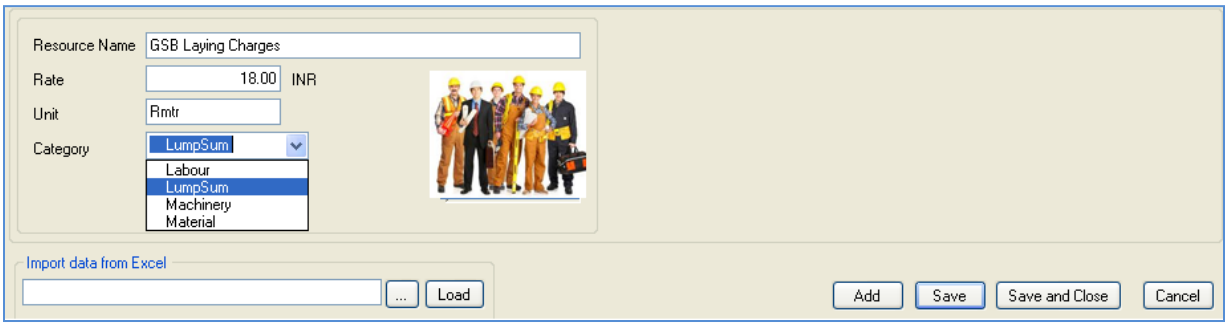
87. Examples are cement bitumen, steel rebars etc. This type of resources is assumed to be available at project site at the Rate or as at quarry/production yard with or without leads. If leads are involved lead values are to be keyed in to the table apart from the lead rate per unit length against transportation costs. If necessary carriage calculator help may be resorted to estimate costs. This type of breakdown gives a picture to the company as how much cost is involved in the transportation vs. use of alternate resource and or risks involved in such transportation.

88. Enter name of resource, rate, unit, category, and make, lead, rate of lead and click add/save.



6.1.4 Money / Lump sum

89. These are Lump sum costs (LS), Subcontract Rates and Market Price to be associated as direct costs payable to several agencies. Enter name of resource and click add/save.



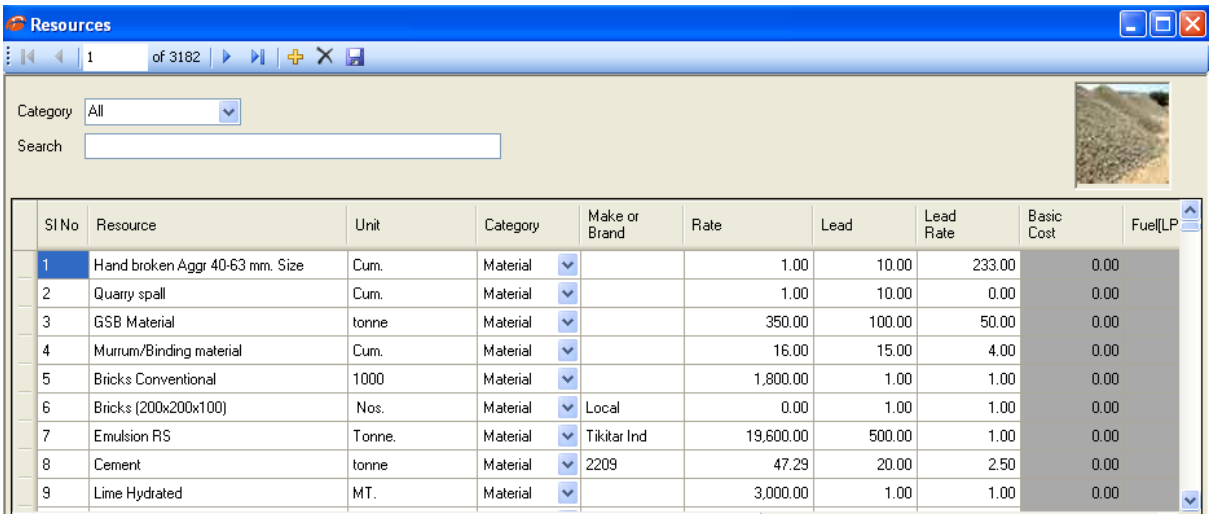
90. The Rates entered include all taxes, reaching and establishment costs as assumed in analyzing the project.

6.2 Master Resources

91. Program comes with a huge list of Resources. However the project may require differently in performing Tasks. It is necessary to create few of them or modify them as may be required. Program while keeping your master intact, snapshots resources for each project. Therefore editing of these Resources will still keep your database preserved for all times.

92. Program recommends searching availability of a resource intended to be created. If such resource is already available, better to use existing one by editing as per project requirement.

93. The image below shows entire list of resources present in the database. A resource is created on this form if not already existing in the master. Adding of them is already explained category wise above.



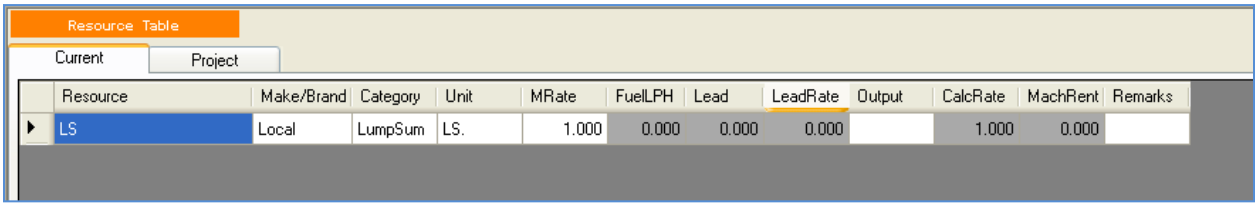
Sl No	Resource	Unit	Category	Make or Brand	Rate	Lead	Lead Rate	Basic Cost	Fuel(LP
1	Hand broken Aggr 40-63 mm. Size	Cum.	Material		1.00	10.00	233.00	0.00	
2	Quarry spall	Cum.	Material		1.00	10.00	0.00	0.00	
3	GSB Material	tonne	Material		350.00	100.00	50.00	0.00	
4	Murrum/Binding material	Cum.	Material		16.00	15.00	4.00	0.00	
5	Bricks Conventional	1000	Material		1,800.00	1.00	1.00	0.00	
6	Bricks (200x200x100)	Nos.	Material	Local	0.00	1.00	1.00	0.00	
7	Emulsion RS	Tonne.	Material	Tikitar Ind	19,600.00	500.00	1.00	0.00	
8	Cement	tonne	Material	2209	47.29	20.00	2.50	0.00	
9	Lime Hydrated	MT.	Material		3,000.00	1.00	1.00	0.00	

6.3 Removing Resources not allowed:

94. One can remove a resource is not allowed in ProBID+ since the resource may have been assigned to another project.

6.4 Current Task Resource:

95. This tab shows the Resources assigned to the current Task. Resource parameters may be verified every time while analyzing every Task. Note that altering any parameter of a Resource would affect global changes and applicable to the entire project.


Resource Table

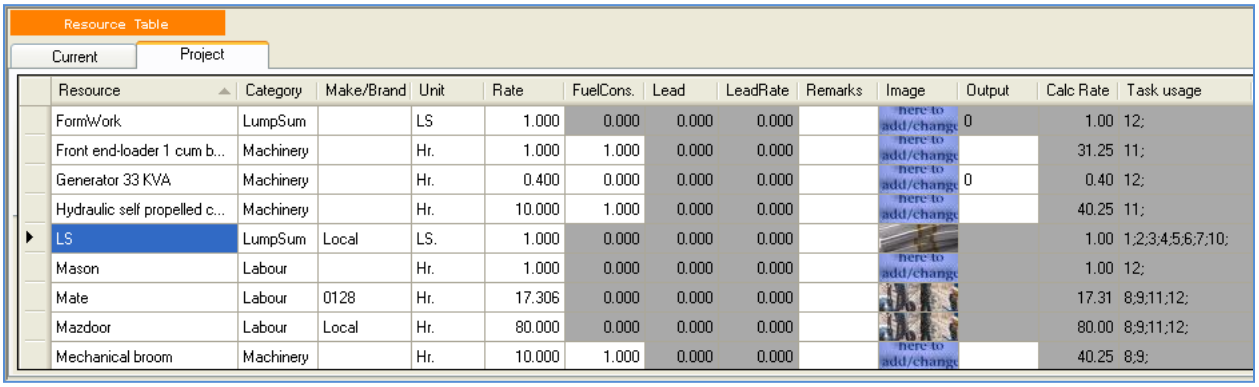
Current | Project

Resource	Make/Brand	Category	Unit	MRate	FuelLPH	Lead	LeadRate	Output	CalcRate	MachRent	Remarks
LS	Local	LumpSum	LS.	1.000	0.000	0.000	0.000		1.000	0.000	

6.5 Project Resources:

96. Project Resources are the resources involved in the entire project for all the Task items. Project Resources are listed in Alphabetical order and category wise. Click on the project resources category and select the category i.e. Machinery, Material, Labor, Lump sum.

97. Once the Market rates of Material, Labor, Machinery and Lump sum are entered against each resource the Rates are updated globally for the resource across the project to affect cost of the project.


Resource Table

Current | Project

Resource	Category	Make/Brand	Unit	Rate	FuelCons.	Lead	LeadRate	Remarks	Image	Output	Calc Rate	Task usage
FormWork	LumpSum		LS	1.000	0.000	0.000	0.000		here to add/change	0	1.00	12;
Front end-loader 1 cum b...	Machinery		Hr.	1.000	1.000	0.000	0.000		here to add/change		31.25	11;
Generator 33 KVA	Machinery		Hr.	0.400	0.000	0.000	0.000		here to add/change	0	0.40	12;
Hydraulic self propelled c...	Machinery		Hr.	10.000	1.000	0.000	0.000		here to add/change		40.25	11;
LS	LumpSum	Local	LS.	1.000	0.000	0.000	0.000				1.00	1;2;3;4;5;6;7;10;
Mason	Labour		Hr.	1.000	0.000	0.000	0.000		here to add/change		1.00	12;
Mate	Labour	0128	Hr.	17.306	0.000	0.000	0.000				17.31	8;9;11;12;
Mazdoor	Labour	Local	Hr.	80.000	0.000	0.000	0.000				80.00	8;9;11;12;
Mechanical broom	Machinery		Hr.	10.000	1.000	0.000	0.000		here to add/change		40.25	8;9;

6.6 Maximum units of Resource

98. In Assignment Table any coefficient should be assigned to a value as defined in the following illustration.

Project Qty x Coefficient / Target Qty should not exceed 65,000,000.

(This limitation is imposed while keeping in view the MS project limitation.)

99. To handle such limitations, if project requires, ProBID+ recommends changing the units of the resource to a higher bracket such as from cubic centimeter to Cubic meter or from ones to thousands or more as appropriate.

100. This kind of situation arises when you try to enter small currency unit for a bigger value item like subcontract to perform a higher valued task. Program recommends using higher valued currency denomination of 100 Cents / 100 USD or liking LS or market rate.

6.7 About resource leveling

101. Resource leveling is a way to fix resource over allocation. Generally, resources are leveled in two ways. This is generally applicable to limited availability of machine resources.

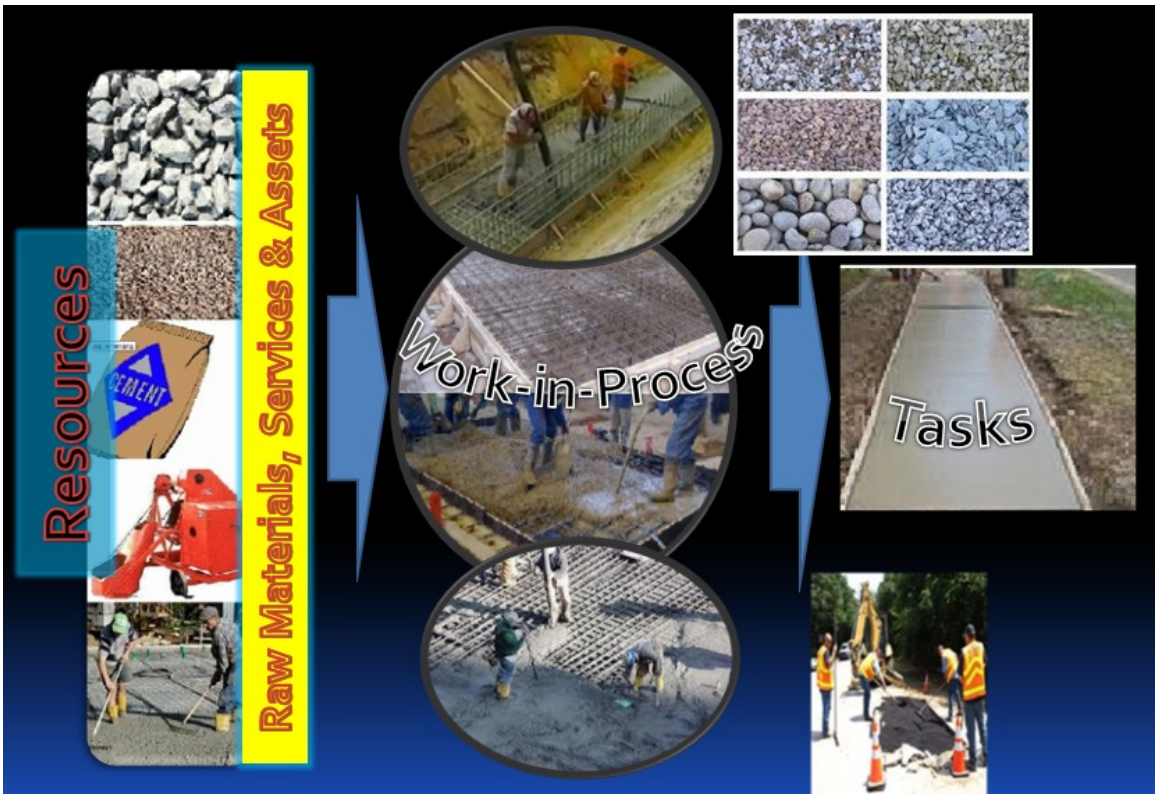
a. By delaying a Task Item until the assigned resource has time to work on it.

b. By splitting a Task Item so that part of a Task Item is done when planned and the rest of it is done later when the assigned resource has time.

102. You can delay or split Tasks using the Resource Leveling feature.

7 Assignments/ Rate Analysis

103. Rates Analysis can be expressed as assignment of Resources to Tasks to arrive at a rate to each Task unit. When Resources are assigned to a Task, ProBID+ calculates a rate for the Task per Unit of Project Quantity. Estimation of rates for each Task/BOQ item is a special technique and requires experience of a professional engineer with knowledge of execution and practical issues related to each site condition.



7.1 How Rates are arrived

7.1.1 Sample Task: *C&G* (Clearing and Grubbing)

104. Assume that the Task contains only contract services and a machine: Let us understand the Task costs.

a. Find the **Budgeted Cost**: 6069.60. This is arrived as under

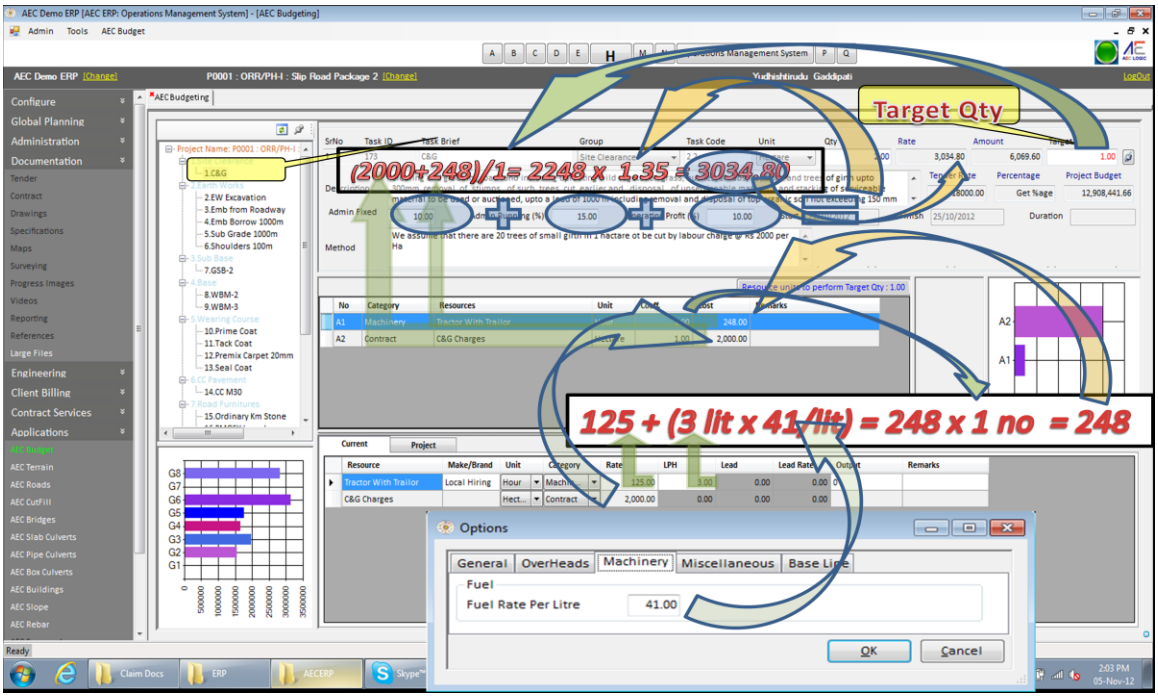
i. The Target Qty = 1 Hectare

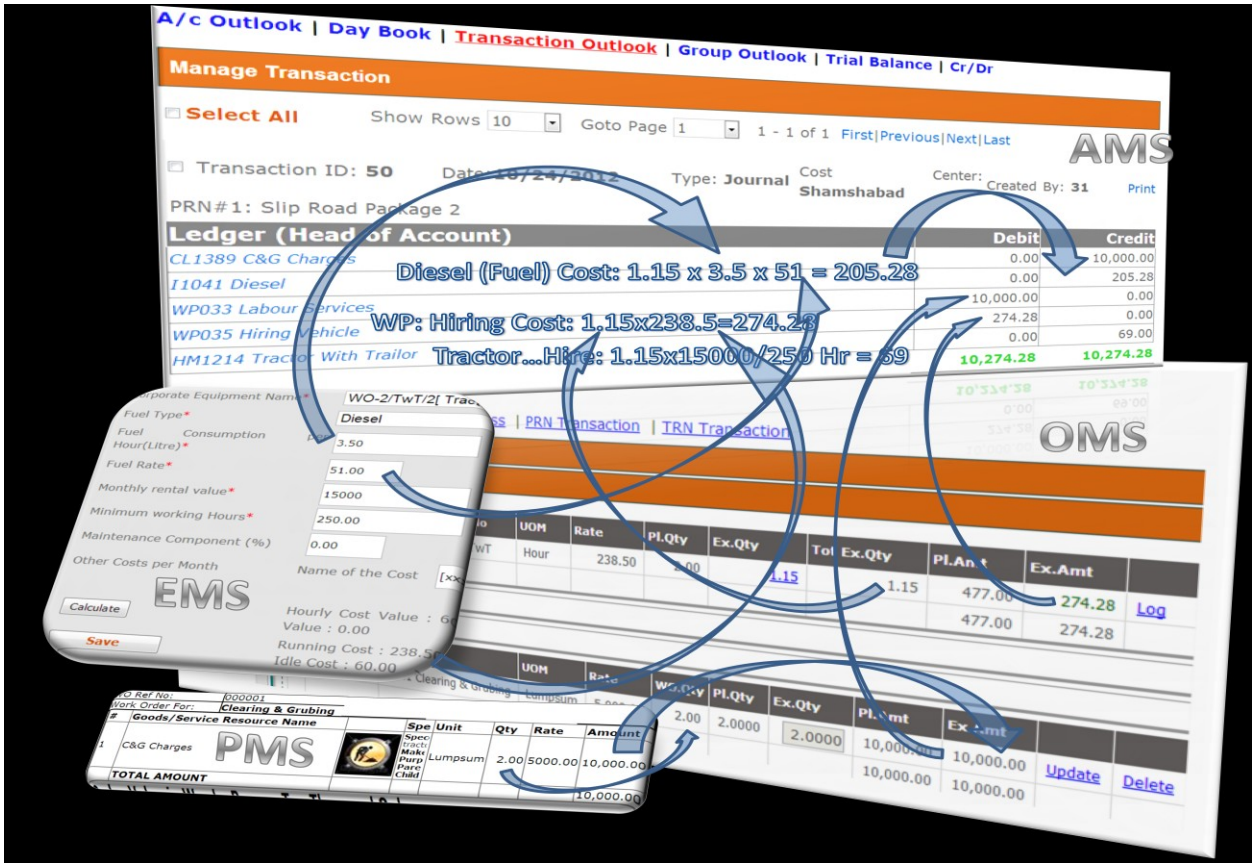
ii. **Direct cost** (calculated) = Cost of Tractor with Trailer (= 248.00) + C&G Charges (Lumpsum or Contract charges = 2000) = 2248.00

iii. **Indirect Cost** = 35% of the Direct cost = 2248 x 35% = 786.80

iv. **Rate** = **Direct Cost** (2248.00) + **Indirect Cost** (786.80) = 3034.80

b. **Budgeted Cost** = **Project Qty** (2.00) x **Budgeted Rate** (3034.80) = 6069.60


Target Qty
(2000+248)/1= 2248 x 1.35 = 3034.80
125 + (3 lit x 41/lit) = 248 x 1 no = 248
Options
General
OverHeads
Machinery
Miscellaneous
Base Line
Fuel
Fuel Rate Per Litre
41.00
OK
Cancel


A/c Outlook | Day Book | Transaction Outlook | Group Outlook | Trial Balance | Cr/Dr
Manage Transaction
AMS
Transaction ID: 50
Type: Journal
Cost Shamshabad
Created By: 31
PRN#1: Slip Road Package 2
Ledger (Head of Account)
Debit
Credit
Diesel (Fuel) Cost: 1.15 x 3.5 x 51 = 205.28
WP: Hiring Cost: 1.15x238.5=274.28
Tractor...Hire: 1.15x15000/250 Hr = 69
EMS
Fuel Type
Diesel
Fuel Consumption Hour(Litre)
3.50
Fuel Rate
51.00
Monthly rental value
15000
Minimum working Hours
250.00
Maintenance Component (%)
0.00
Other Costs per Month
Calculate
Save
OMS
PMS
Clearing & Grubing
C&G Charges
Lumpsum
TOTAL AMOUNT
Update
Delete
Log

7.1.2 Machinery Costs:

105. Machinery have certain running and idle depreciations. If the machine runs then only it depreciates under this concept. However an yearly depreciation is calculated under company and income tax acts on WDV/SLM methods on the machinery cost.

7.1.3 Fuel Costs:

106. Fuel is the indirect resource or sub-resource to the main machine resources and its rate is assumed to be common for all the equipment being assigned in a project. User needs to key-in market rate in Options Form explained above.

107. If a machine runs for 1 hour then it incurs the following costs A + cost B to the project direct cost.

A: M/Rate (market rate)

B: Fuel Liter/hr X Fuel Rate Per Liter

7.1.4 Rental/Owning cost components:

108. These constants are used in arriving at the Calculated Rent of a machine as shown against each.

Calculated Rent = Cost A + Cost B + Cost C (Example 67.5 + 20.25 + 82.53 = 170.28) as explained below

7.1.4.1 Depreciation Component:

109. A work resource like Machine has certain balance residual value after achievement of its viable life. The cost of the machine that can be adjusted or debited to the projects after deducting remaining dead costs is depreciation constant. This is generally 90% or 0.9.

A = Depreciation Constant x Basic Cost / Life (hr) (Example = 0.9 x 750 000 /10 000 = 67.5)

7.1.4.2 Maintenance Component:

110. An average hourly running maintenance expense of a machine resource like filters, lubricants and major repairs calculated and fixed as some percentage of the hourly rate. ProBID+ by default assumes this as 0.3 or 30% of the hourly usage rate.

B = Maintenance Component x Depreciation Constant x Basic Cost / Life (hr)

(Example = 0.3 x 0.9 x 750 000 /10 000 = 20.25)

7.1.4.3 Interest Rate %:

111. Yearly simple interest rate on finance of the machinery purchased for the project. ProBID+ assumes that the machinery resources assigned to tasks have a calculated rental value for comparison to market rate or standard rate per hour of usage. The calculated rental value includes interest component on an average market depreciation/interest rate apart from hourly owned cost.

C = {{Basic Cost x [1 + (Interest Rate / 100)] ^ Equipment Life in Years} – Basic Cost}/ Life (hr)
(Example = {{750 000 x [1+ (16/100)] ^ 5} – 750 000}/10 000 = 82.53)

7.1.4.4 Equipment Life (Years):

112. Normal Equipment life in years that a machine achieves its life in hours to return purchase and interest costs before it becomes unviable.

7.2 Assigning Resources

7.2.1 Manual creation

113. Create a list of resources that will make up assignments to perform a Task.

114. Assign Resources to the Task by selecting dropdown list that contain master Resources.

115. By default ProBID+ adds Assignment *Coefficients* = 1.00. After all the desired resources are added one can edit the *Coefficients* required to perform a set of Task units defined as *TargetQty*.

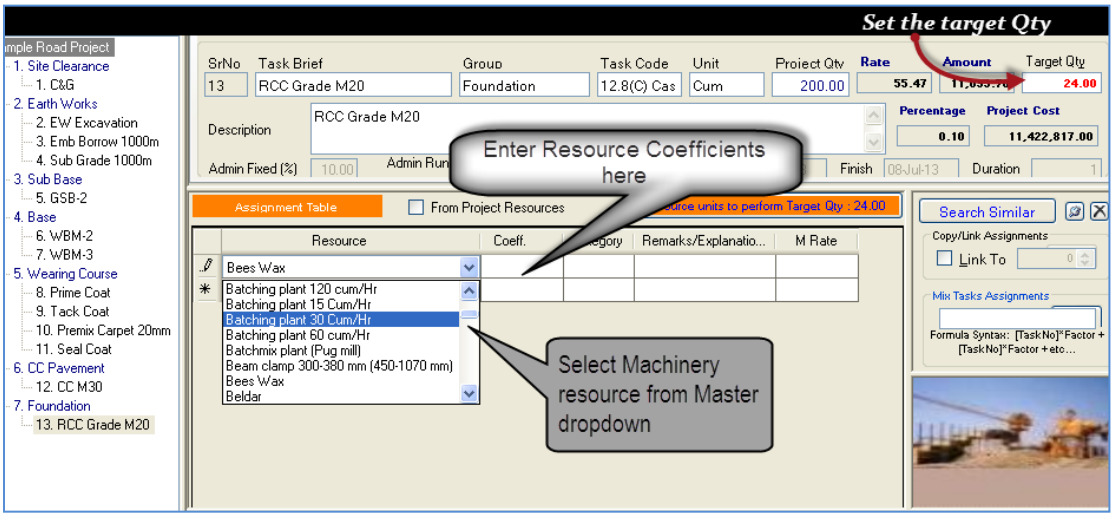
116. By default the *TargetQty* =1.00 which can be set to a value of output to be performed by a major resource with certain assumed efficiency generally per hour duration.

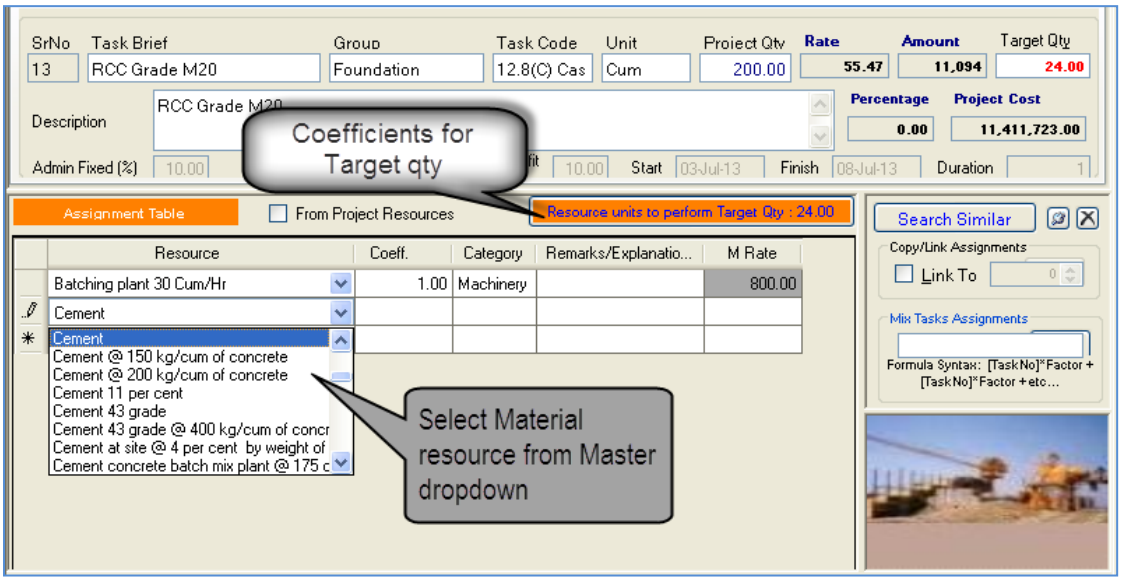
117. For example a Task named '*M20 Concrete'* is to be produced by a major resource like batching plant with designed capacity of 30 cum per hour. We assume an efficiency of 80% of this machine. An hourly production is thus taken as 30 x 80%=24 cum. Then the TargetQty shall be entered as 24 cum.

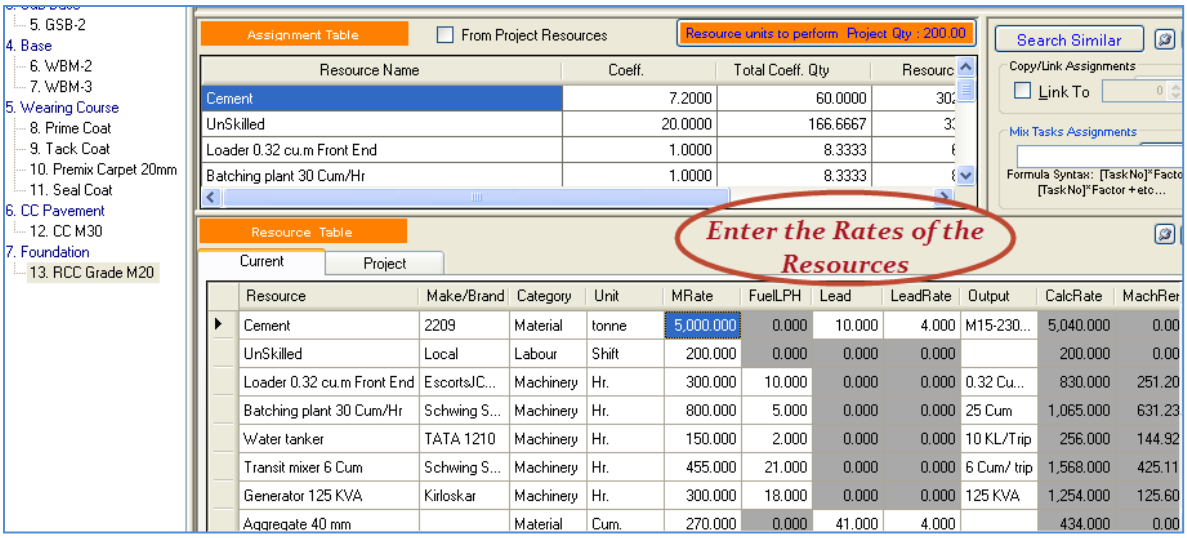
118. We assign other materials and supporting machinery resources according to this TargetQty to be preformed. We calculate cement as 24 x 0.30 tonne per cum as the Qty in the assignment table against this item. We assume to assign 4 transit mixers (machines) with a carrying capacity of 6 cum that can perform one trip per hour.

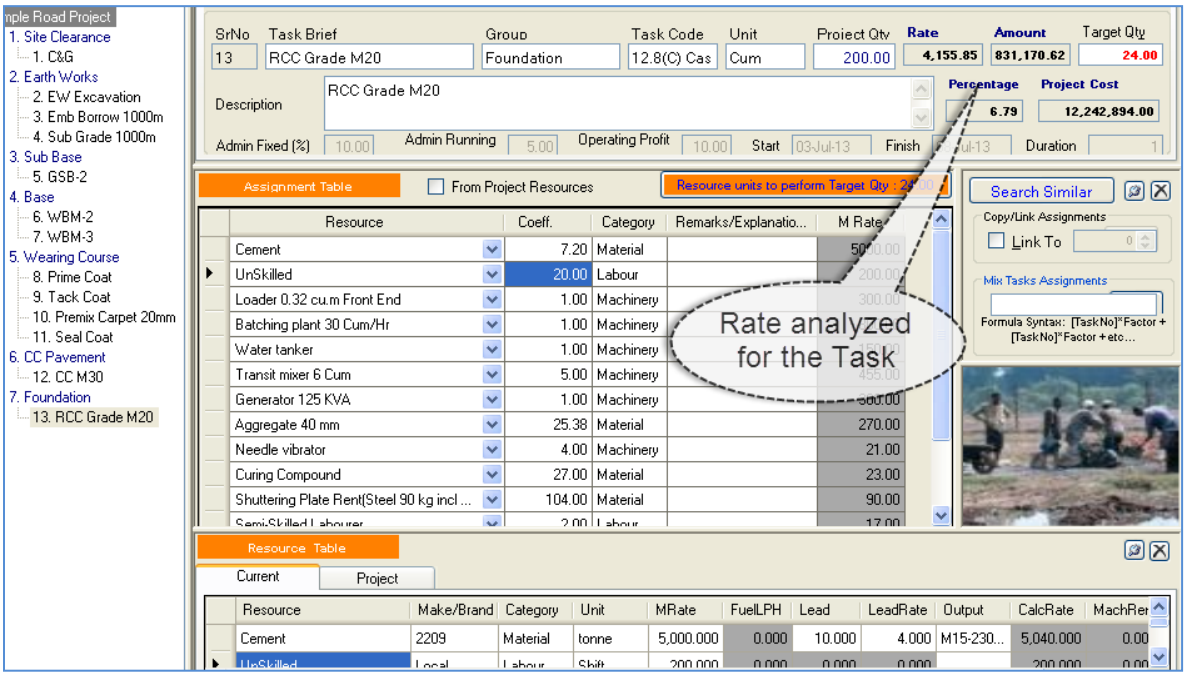
119. Other associated resources are accordingly assigned to perform the TargetQty of 24 cum.

120. A rate is arrived in the task form showing as Rate. This is per unit of Task. This rate is final includes over heads and profits as defined in the Project > Options form on Overheads tab



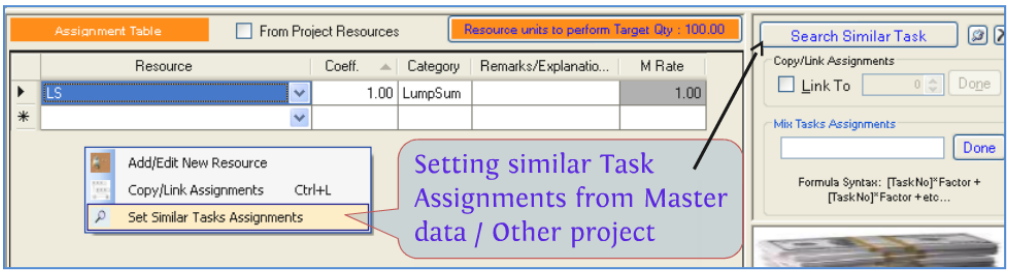

SrNo
Task Brief
Group
Task Code
Unit
Project Qty
Rate
Amount
Target Qty
13
RCC Grade M20
Foundation
12.8(C) Cas
Cum
200.00
55.47
11,094
24.00
Description
RCC Grade M20
Percentage
Project Cost
0.00
11,411,723.00
Admin Fixed (%)
10.00
Start
03-Jul-13
Finish
08-Jul-13
Duration
1
Coefficients for Target qty
Assignment Table
From Project Resources
Resource units to perform Target Qty : 24.00
Search Similar
Resource
Coeff.
Category
Remarks/Explanatio...
M Rate
Batching plant 30 Cum/Hr
1.00
Machinery
800.00
Cement
Cement @ 150 kg/cum of concrete
Cement @ 200 kg/cum of concrete
Cement 11 per cent
Cement 43 grade
Cement 43 grade @ 400 kg/cum of concr
Cement at site @ 4 per cent by weight of
Cement concrete batch mix plant @ 175 c
Select Material resource from Master dropdown
Copy/Link Assignments
Link To
Mix Tasks Assignments
Formula Syntax: [TaskNo]*Factor + [TaskNo]*Factor + etc...


5. GSB-2
4. Base
6. WBM-2
7. WBM-3
5. Wearing Course
8. Prime Coat
9. Tack Coat
10. Premix Carpet 20mm
11. Seal Coat
6. CC Pavement
12. CC M30
7. Foundation
13. RCC Grade M20
Assignment Table
From Project Resources
Resource units to perform Project Qty : 200.00
Search Similar
Resource Name
Coeff.
Total Coeff. Qty
Cement
7.2000
60.0000
UnSkilled
20.0000
166.6667
Loader 0.32 cu.m Front End
1.0000
8.3333
Batching plant 30 Cum/Hr
1.0000
8.3333
Copy/Link Assignments
Link To
Mix Tasks Assignments
Formula Syntax: [TaskNo]*Factor + [TaskNo]*Factor + etc...
Resource Table
Current
Project
Enter the Rates of the Resources
Resource
Make/Brand
Category
Unit
MRate
FuelLPH
Lead
LeadRate
Output
CalcRate
Cement
2209
Material
tonne
5,000.000
0.000
10.000
4.000
M15-230...
5,040.000
0.00
UnSkilled
Local
Labour
Shift
200.000
0.000
0.000
0.000
200.000
0.00
Loader 0.32 cu.m Front End
EscortsJC...
Machinery
Hr.
300.000
10.000
0.000
0.000
0.32 Cu...
830.000
251.20
Batching plant 30 Cum/Hr
Schwing S...
Machinery
Hr.
800.000
5.000
0.000
0.000
25 Cum
1,065.000
631.23
Water tanker
TATA 1210
Machinery
Hr.
150.000
2.000
0.000
0.000
10 KL/Trip
256.000
144.92
Transit mixer 6 Cum
Schwing S...
Machinery
Hr.
455.000
21.000
0.000
0.000
6 Cum/ trip
1,568.000
425.11
Generator 125 KVA
Kirloskar
Machinery
Hr.
300.000
18.000
0.000
0.000
125 KVA
1,254.000
125.60
Aggregate 40 mm
Material
Cum.
270.000
0.000
41.000
4.000
434.000
0.00



7.2.2 Automating Assignments

7.2.2.1 Set Similar Task



121. ProBID+ has two types of help for the project manager. By Pressing F1 program opens a HTML help file. Here you can select any specific topic either by search mode or double click on the any specific topic will open detailed descriptive help document.

122. In the same help menu to search Task press Alt+F11 will open the Search Similar Task window.

123. In the Search Similar Task window we can access master databases as under

a. Two standards most commonly used for buildings and roads

MOSRTH OR MOST (Ministry of Shipping Road Transport and highways)

CPWD (Central Public Works Department)

b. Company Master (Created by User)

c. Existing Project (can be typed or browsed to choose any Task from the previously analyzed projects by clicking Load button which displays all the tasks)

124. Select the required task. Once assignments of a particular Task are found suitable for this project click on '*Set Resources to Current Task'* button on the window.

7.2.2.1.1 Process of Set Similar Task

125. This feature copies Assignments and sets Target Qty from already analyzed Task.

7.2.2.1.2 Step 1:

126. Click Search Similar Task button in Analyzer Form

7.2.2.1.3 Step 2:

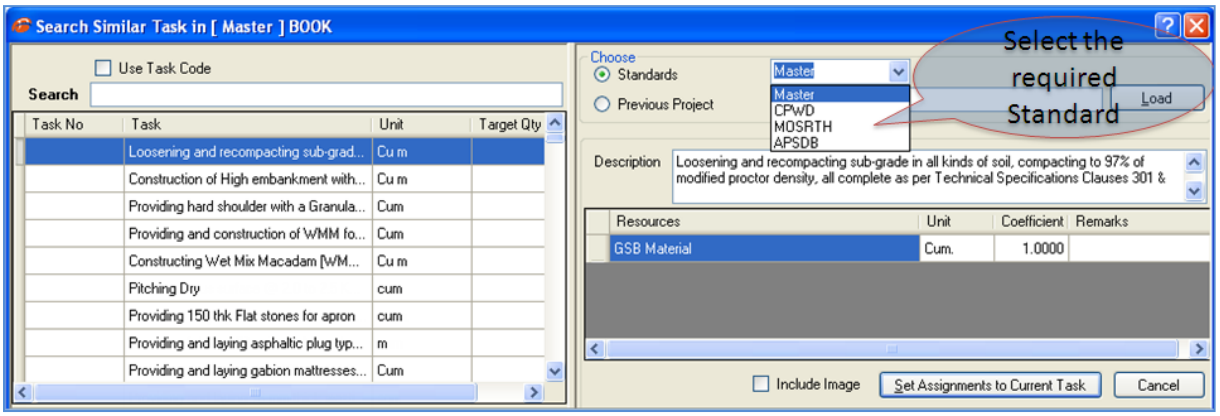
127. Search Similar Task window pops up. Choose Standards or Previous Project from where Assignments and Target Qty are to be copied to the current Task.

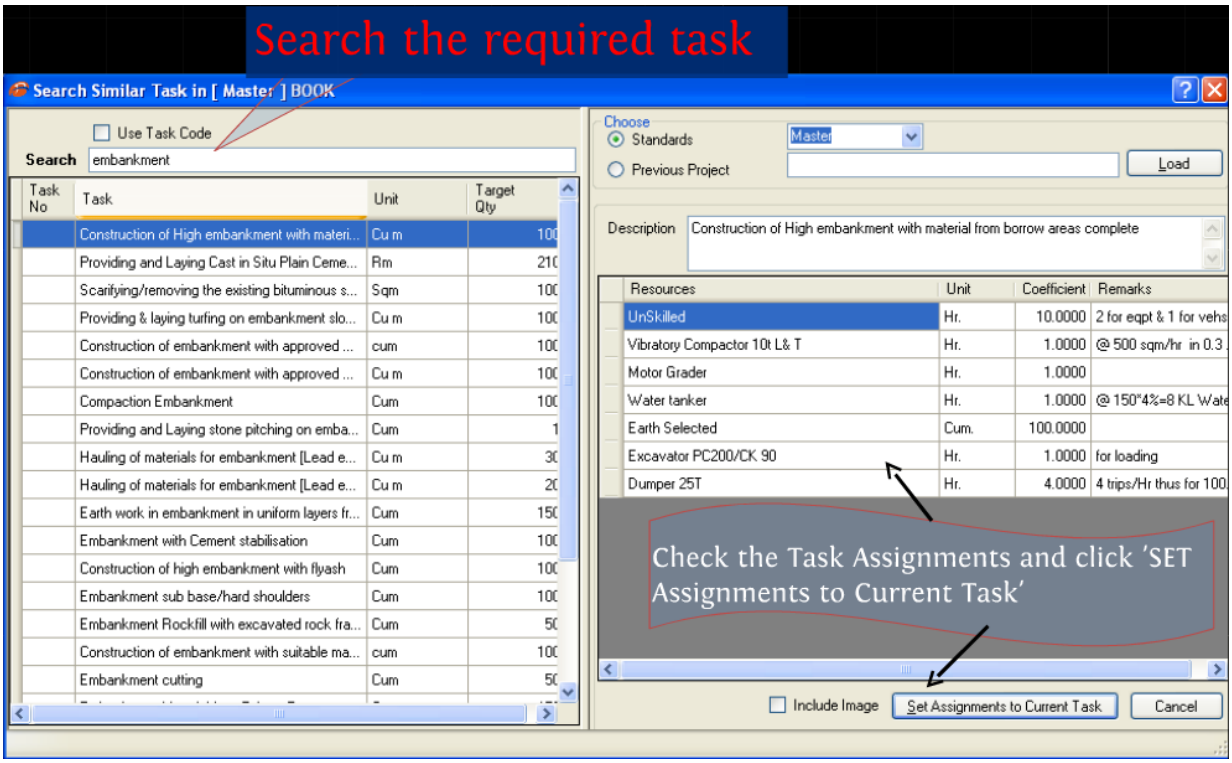
7.2.2.1.4 Step 3:

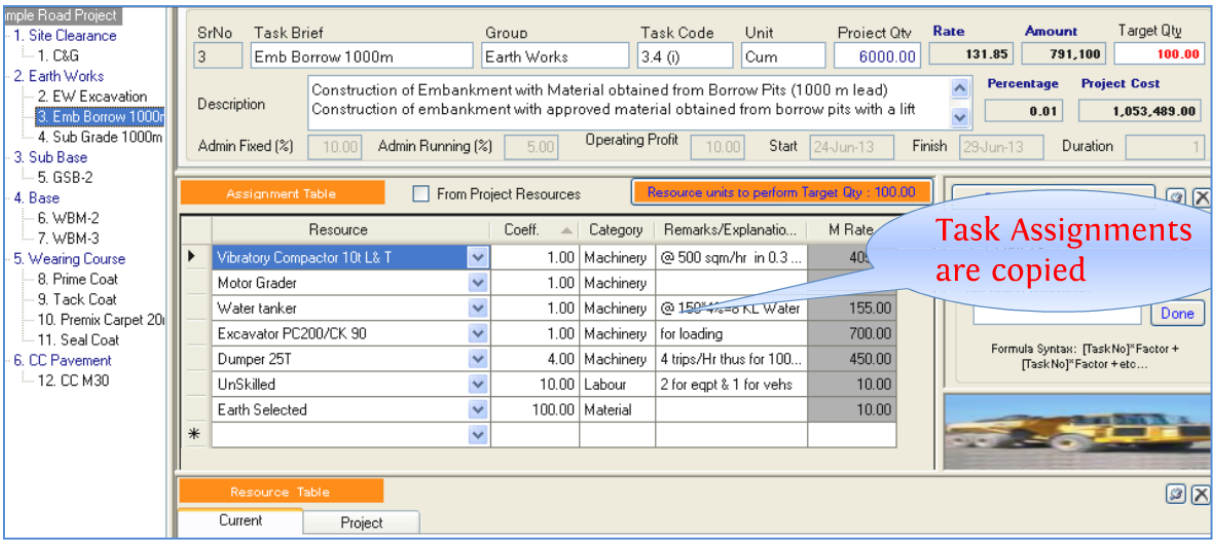
128. Filtered list of Tasks is shown with the matching text entered in the Task Search field (example Embankment). Selected Task assignments are displayed in a table on the right

7.2.2.1.5 Step 4:

129. Select the required Task from the filtered list and click Set Assignments to Current Task button. Selected Task Assignments and Target Qty values are copied to the current Task in the Analyzer Form.


Search Similar Task in [Master] BOOK
Use Task Code
Search
Task No
Task
Unit
Target Qty
Loosening and recompacting sub-grad...
Construction of High embankment with...
Providing hard shoulder with a Granula...
Providing and construction of WMM fo...
Constructing Wet Mix Macadam [WM...
Pitching Dry
Providing 150 thk Flat stones for apron
Providing and laying asphaltic plug typ...
Providing and laying gabion mattresses...
Choose
Standards
Previous Project
Master
CPWD
MOSRTH
APSDB
Select the required Standard
Load
Description
Loosening and recompacting sub-grade in all kinds of soil, compacting to 97% of modified proctor density, all complete as per Technical Specifications Clauses 301 &
Resources
Unit
Coefficient
Remarks
GSB Material
Cum.
1.0000
Include Image
Set Assignments to Current Task
Cancel


Search the required task
Search Similar Task in [Master] BOOK
Use Task Code
Search
embankment
Task No
Task
Unit
Target Qty
Construction of High embankment with materi...
Providing and Laying Cast in Situ Plain Ceme...
Scarifying/removing the existing bituminous s...
Providing & laying turfing on embankment slo...
Construction of embankment with approved ...
Construction of embankment with approved ...
Compaction Embankment
Providing and Laying stone pitching on emba...
Hauling of materials for embankment [Lead e...
Hauling of materials for embankment [Lead e...
Earth work in embankment in uniform layers fr...
Embankment with Cement stabilisation
Construction of high embankment with flyash
Embankment sub base/hard shoulders
Embankment Rockfill with excavated rock fra...
Construction of embankment with suitable ma...
Embankment cutting
Choose
Standards
Previous Project
Master
Load
Description
Construction of High embankment with material from borrow areas complete
Resources
Unit
Coefficient
Remarks
UnSkilled
Vibratory Compactor 10t L& T
Motor Grader
Water tanker
Earth Selected
Excavator PC200/CK 90
Dumper 25T
Check the Task Assignments and click 'SET Assignments to Current Task'
Include Image
Set Assignments to Current Task
Cancel



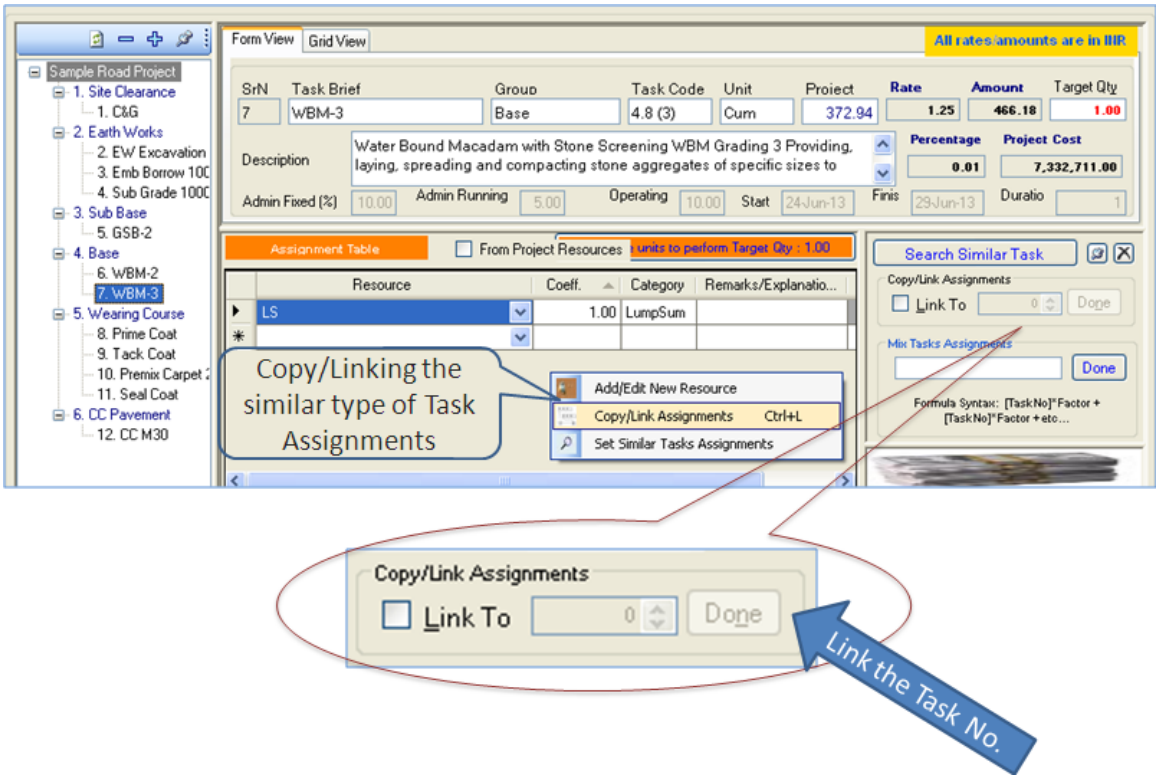
7.2.2.2 Dynamic Links among Tasks

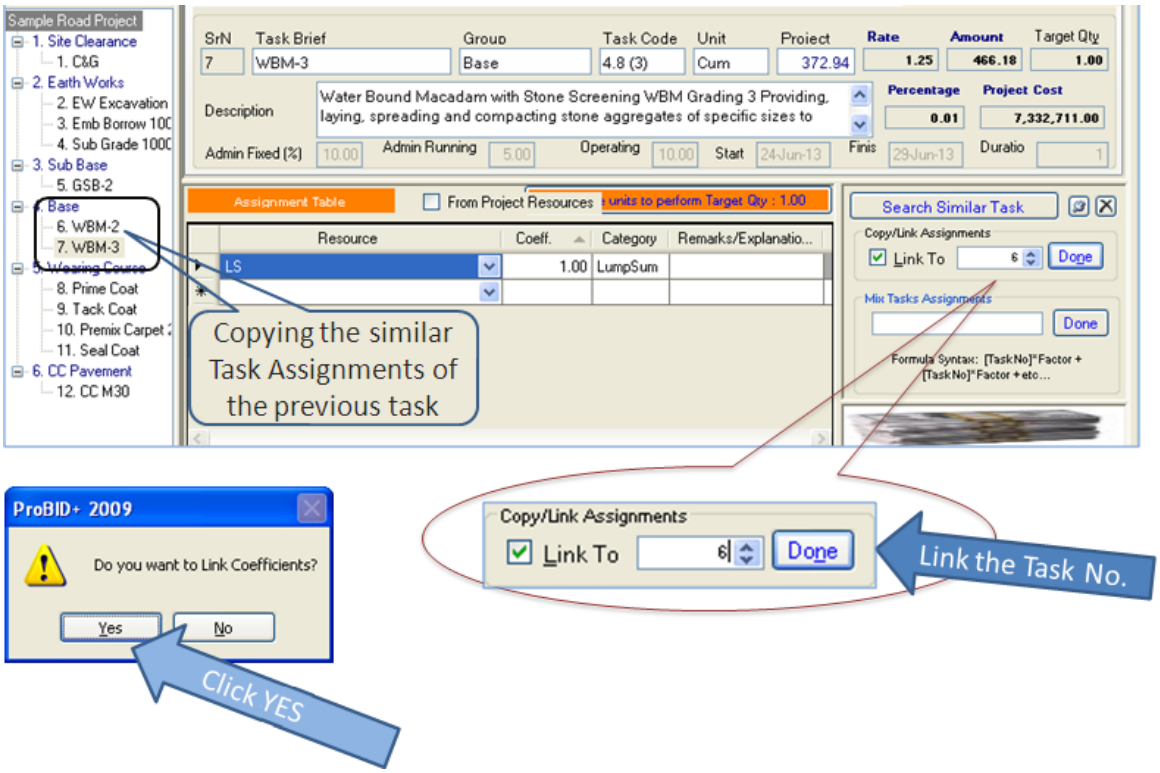
130. An excellent feature by ProBID+ to establish a dynamic link among similar Tasks. When the parent Task is modified or updated entire linked tasks get updated and the project cost changes on the fly.

131. **Link to:** Helps to give a Link between two or more Task/BOQ items which require the same resources. The **Link To** enables all linked Tasks of the project get updated when a parent linked Task item is updated. Select the Task number and press *'Done'* button to finish

132. In the program you want to link information from, click the *'Link To'* check box to appear the entire parent Tasks which have not been linked already with another Task Item. Select Task ID and press *'Done'* button appearing adjoining.

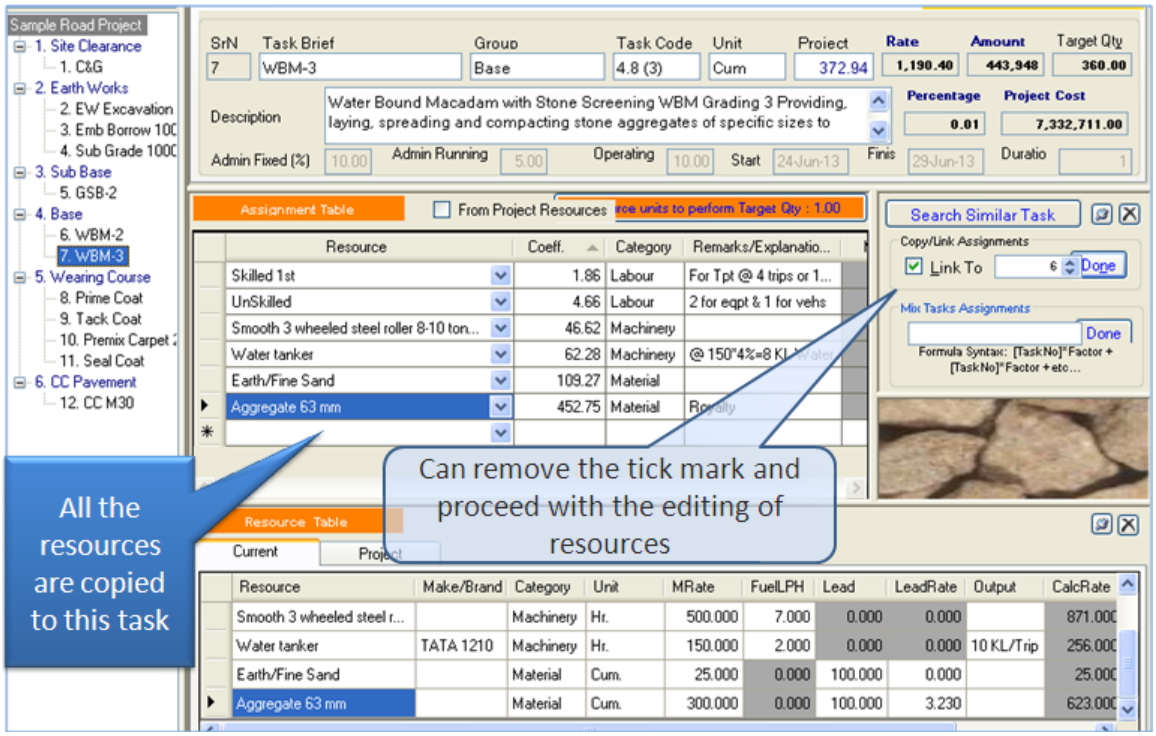
133. This option helps to give a Link between two or more Task items which require the same resources. The Link To enables all linked Tasks of the project get updated when a parent Task item is updated.


Copy/Linking the similar type of Task Assignments
Copy/Link Assignments
Link To
Done
Link the Task No.


Copying the similar Task Assignments of the previous task
ProBID+ 2009
Do you want to Link Coefficients?
Yes
No
Click YES
Copy/Link Assignments
Link To
Done
Link the Task No.

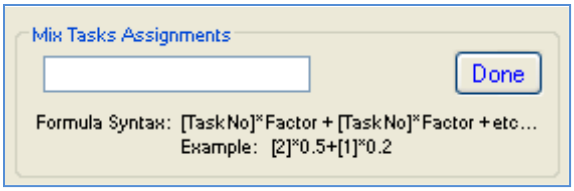
7.2.2.3 Copy Assignments

134. If a linked Task requires a change, remove the link and start editing. Removal of a link nothing but copying assignments. The copied assignments can be edited to suit analysis.



7.2.2.4 Formula Bar

135. ProBID+ comes with another cool feature that allows mixing several tasks to have a Task made up of different tasks in different proportions. For example a lined drain in linear meters is a Task made up of excavation and Concreting Tasks which were already analyzed previously. User needs to enter a formula syntax as shown. It means that how much of each mixed of tasks contribute in making up the current Task. ProBID+ calculates assignments proportionately based on individual factors by combining the sub-Tasks.



8 Project Cash Flows

136. There are several factors affecting project cash flows. The cash flow calculations would also add additional cost of financing to be incorporated in to the indirect budget. Based on the graph generated and cash requirements, finance charges may be estimated and added to the project. This feature gives a realistic estimated cash requirement at every stage of the project by taking several advances, client retentions and delays in receipts etc.

8.1 Gap Funding

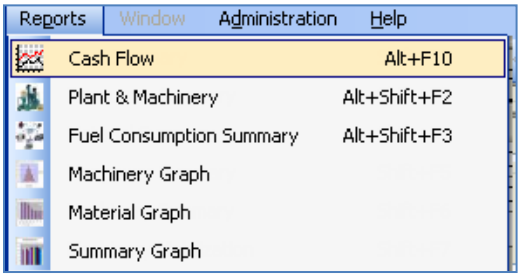
137. Construction projects are run on huge investments. If cash flows are suffered at any point of time during execution, the project lands up in high risk, enabling the client to en-cash guarantees pledged. There is always a delay in receipts from the clients while vendors and laborers do not wait for payments. The gap funding between the vendor payments and client recipes need to be estimated to mobilize funding to the project. This tool helps in estimating such cash flows in to the project.

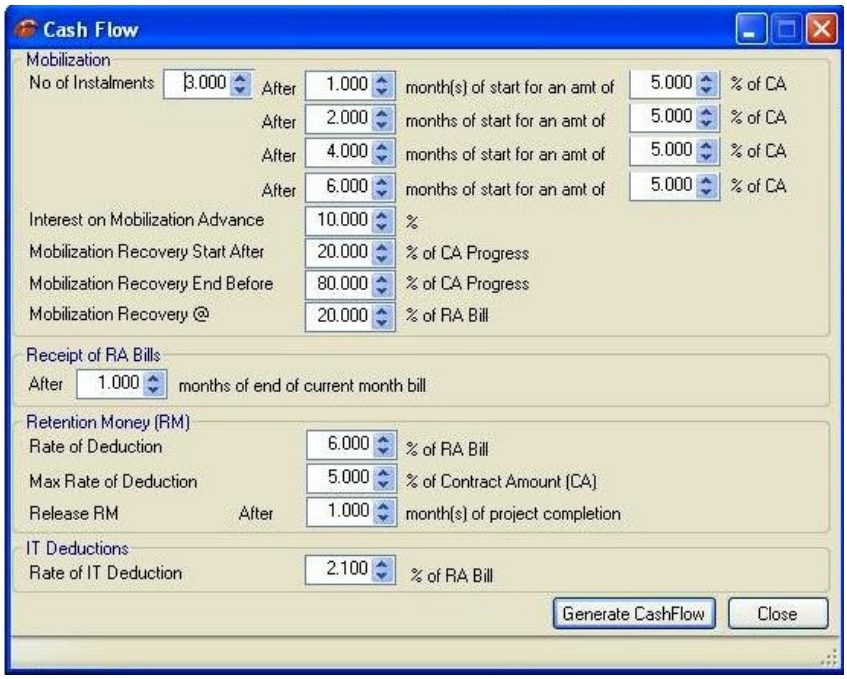
8.2 Mobilization Advances

138. Mobilization Advances are received in three to four installments from the project authorities which are to be keyed in to the ProBID$^+$ Cash Flow form. You may also key in percentage of such payments, interest charges if any, and recovery schedule of the advances. Keeping common pattern of the industry requirement and FIDIC, the general conditions of contract, ProBID$^+$ prompts to key in values.

8.3 Running bills

139. Running bills receipts/payment schedule is also required to be keyed. ProBID$^+$ assumes previously accessed project entries by default. Most project authorities hold certain part of running bill payment as retention money to be released at the end of the project completion time. Such details are to be keyed in to the Cash Flow form by the user.





140. **Cash Flows:** The Cash flow form pops up after the user presses cash flow command on the Reports Menu. Several values are to be set before the ProBID^{+} generates cash flow for the Project.

141. **No Of Installments**: The number of installments mobilization advance disbursements from the project authorities

142. **After:** The time period in months to receiving each installment of mobilization advance.

143. **% Project Cost (PC):** The percentage volume of mobilization advance to be received from the project authorities.

144. **Interest on Mobilization Adv**: Interest rate applicable on the mobilization advance being provided by the project authorities.

145. **Mobilization Recovery Starts After**: Starting month for recovery of the mobilization advance.

146. **Mobilization Recovery End Before**: Ending month for full recovery of the mobilization advance.

147. **Mobilization Recovery @:** Recovery rate of mobilization advance on the Project Cost (PC).

148. **Receipt of RA Bills After:** Period in months after which realization of bills on Running Account Bills/ Interim Payment Certificates (IPCs).

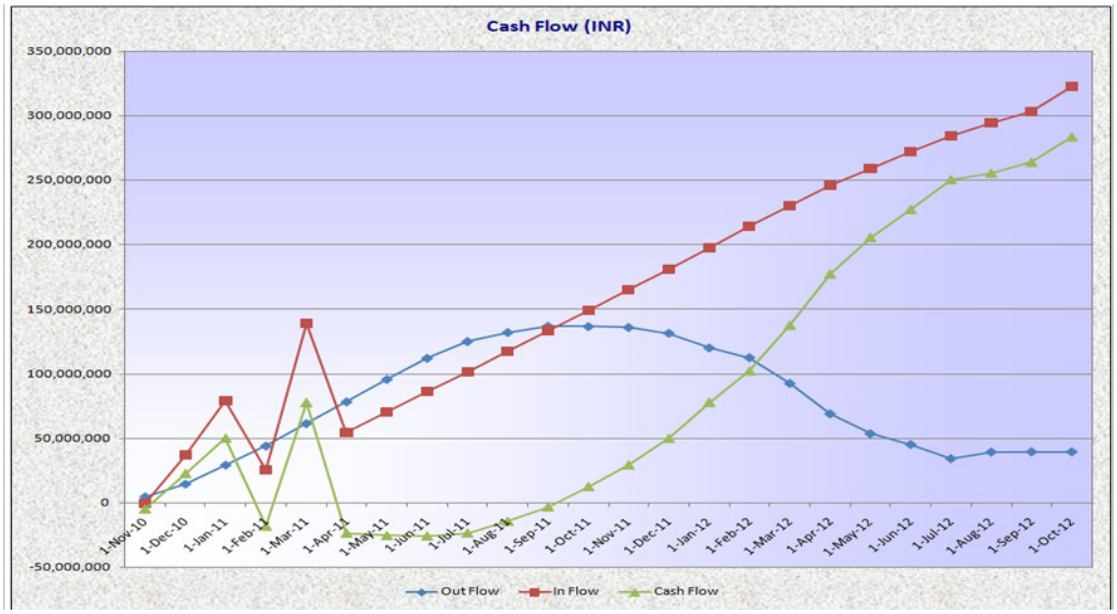
149. **Rate of Deduction:** Rate of deduction of retention money normally retained by the project authorities towards security of the project.

150. **Max rate of Deduction**: At time the rate of deduction that varies initially from certain maximum rate reaches to normal rate of deduction.

151. **Release RM**: Period in months after the project completion by which time the retention money gets released to the contractor.

152. **Rate of IT Deduction**: Rate of deduction of Income Tax recoverable from the IPCs or RA Bills.

153. **Generate Cash flow:** On clicking this button cash flow gets generated in Excel file format.



Months	1-Dec-06	1-Jan-07	1-Feb-07	1-Mar-07	1-Apr-07	1-May-07	1-Jun-07	1-Jul-07	1-Aug-07	1-Sep-07	1-Oct-07	1-Nov-07
S1: Mobilization	34,220,496	90,053,936	140,484,140	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201
S1: SITE CLEARANCE AND DISMANTLING											616,518	5,309,245
S2: EARTH WORKS												
S3: SUBBASE AND BASE COURSES												
S4: BITUMINOUS COURSES												
S5: SLAB BOX AND PIPE CULVERTS												
S6: BRIDGES												
S7: DRAINAGE AND PROTECTION WORKS												
S8: TRAFFIC SIGNS												
S9: MISCELLANEOUS												
Total CumulativeCosts	**34,220,496**	**90,053,936**	**140,484,140**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**156,229,719**	**160,922,446**
Operating Profit												
Out Flow	**34,220,496**	**90,053,936**	**140,484,140**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**155,613,201**	**156,229,719**	**160,922,446**
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Gross Amount From RA Bills		34,220,496	90,053,936	140,484,140	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201	155,613,201	156,229,719
Mobilization Adv.		74,204,121	148,408,241	0	222,612,362	0	0	0	0	0	0	0
Deduction Mob Adv	0	0	0	0	0	0	0	0	0	0	0	0
Net Mobilization Advance	0	74,204,121	148,408,241	0	222,612,362	0	0	0	0	0	0	0
Interest on Net Mob Advance		0	591,714	1,775,142	1,775,142	3,550,284	3,550,284	3,550,284	3,550,284	3,550,284	3,550,284	3,550,284
Retention Money	0	2,053,230	5,403,236	8,429,048	9,336,792	9,336,792	9,336,792	9,336,792	9,336,792	9,336,792	9,336,792	9,373,783
Release of Retention Money												

9 Project Scheduling

9.1 MSP Vs ProBID+

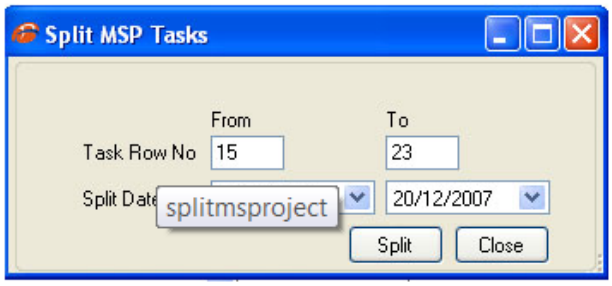
154. ProBID+ is capable of transferring entire Tasks along with Resources and assignments associated with each Task to MSP to mange schedule.

155. Exported ProBID+ data needs to be timed and sequenced based on the project specific requirements. ProBID+ sets by default durations in relation to cost percentage of each task on total Contract Amount. However project needs to estimate durations based on site experience and limitations, availability of resources and space requirements in a project

156. Once durations for each Task are set in MSP, the scheduled dates and sequencing can be imported back to ProBID+ database. This data with schedules can generate machinery mobilization, cash flows, peak resource units, methodology reports and so on.

9.1.1 Remote Task Splitting

157. User may need to split tasks to temporarily suspend execution during monsoon periods or may be required for leveling of resources. It may be time consuming to directly split tasks in MSP without this ProBID+ feature. Following terminology may be understood to use this feature.



a. **Task row from**: MSP Task row number from which the tool intends to split Tasks.

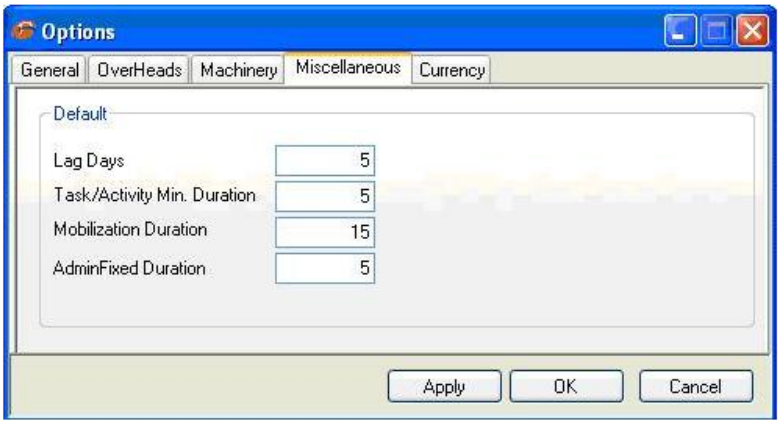
b. **Task row to**: MSP Task row number to which the tool intends to split Tasks.

c. **Split date from**: Calendar date from which the tool intends to split Tasks.

d. **Split date to**: Calendar date to which the tool intends to split Tasks

9.1.2 Miscellaneous Options

158. Certain default values are required to be set while exporting data to MSP. These are listed in the Options form shown under **Project Menu >> Options**



159. **Lag days:** A standard number of days set in Options menu for use by ProBID+ while exporting data to MS Project. This number is used by the ProBID+ to delay start of next Task after the previous Task start date.

160. **Task/Activity Min. Duration:** ProBID+ sets these minimum days for any Task that has less than this calculated number while exporting. ProBID+ by default pushes duration of each task as per the following formula

   a. Task Duration = Project Duration x Percentage Cost of the Task on total Contract Amount

161. **Mobilization Duration:** ProBID+ A standard duration for setting ProBID+ during export of Admin Fixed items to MS Project

162. **Admin Fixed Duration:** A standard duration setting for use by the ProBID+ during export of Admin Fixed costs as Task to MS Project.

9.2 Export to MS Project

9.2.1 Step 1:

Project Menu --> Export to MS Project

163. Wait until the program prompts a message, for example: "**Your project file *NH_2LANE_ Package.mpp* created/modified at C:\NH_2LANE Package path**".

Note 1: ProBID+ creates an MS Project file with the same name of your project and stores in the same folder of your project.

9.2.2 Step 2:

164. Open the MS Project file to which exporting has been done for scheduling

9.2.3 Step 3:

165. Edit/Enter suitable value in Duration, Start Date & predecessor in MS Project application.

Note 2: Do not change order of Tasks and Groups or add/delete Tasks or Groups in MS Project, since these are linked between the two programs. If at all some change is required that may be done in ProBID+ and re-export to MSP.

9.2.4 Step 4:

166. Save & Close MS Project

9.3 Import from MS Project to ProBID+

9.3.1 Step 1:

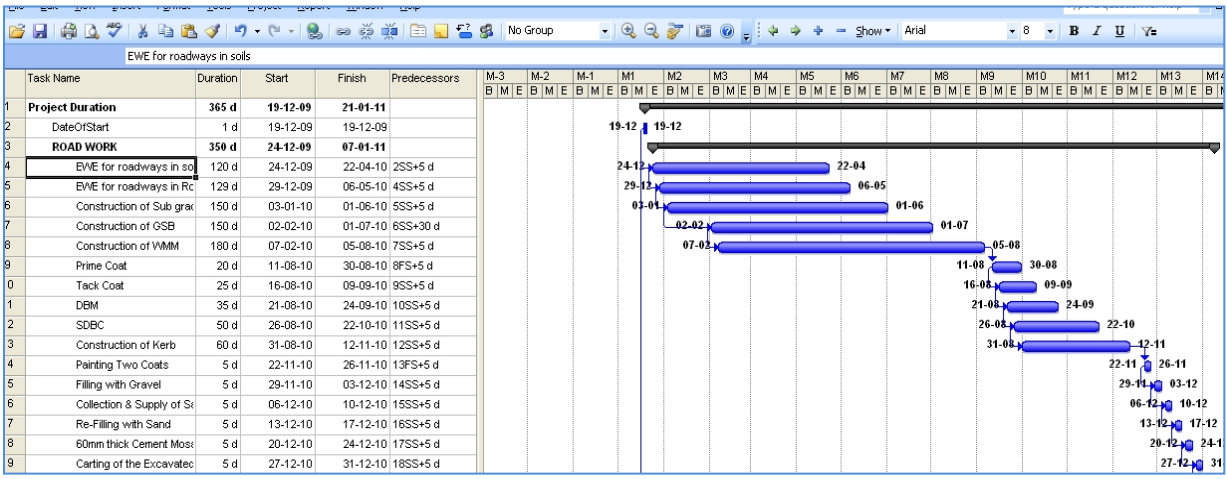
167. Click Project Menu --> Synchronize from MSP in ProBID+ 2009 Analyzer form

9.3.2 Step 2:

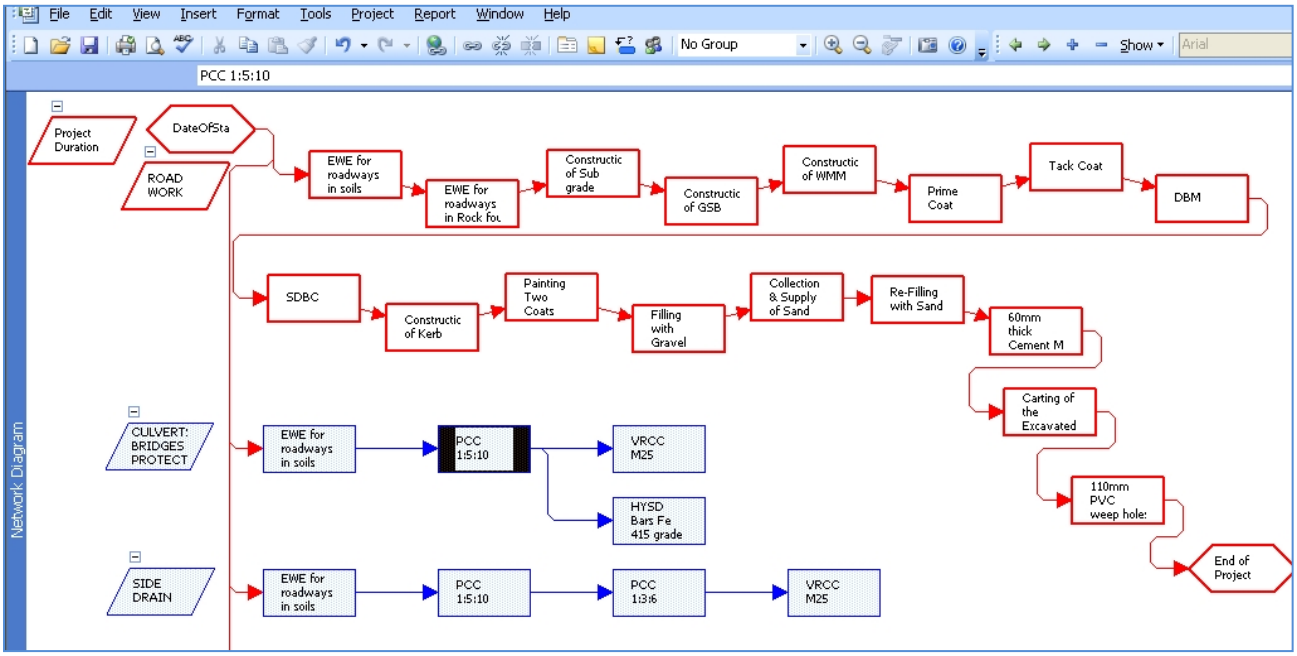
168. Select the MS Project file already scheduled as said in the previous session from the Project folder when prompted. Changes to Duration, Start and finish dates are affected to the respective fields in the Analyzer window for each Task. (Here synchronization of MS Project file back to ProBID+ after scheduling is done.)

9.4 Gantt Charts

169. Some of the MS Project reports are shown below for understanding by the user, how fast and best way the MS Project could be managed to reap excellent results.

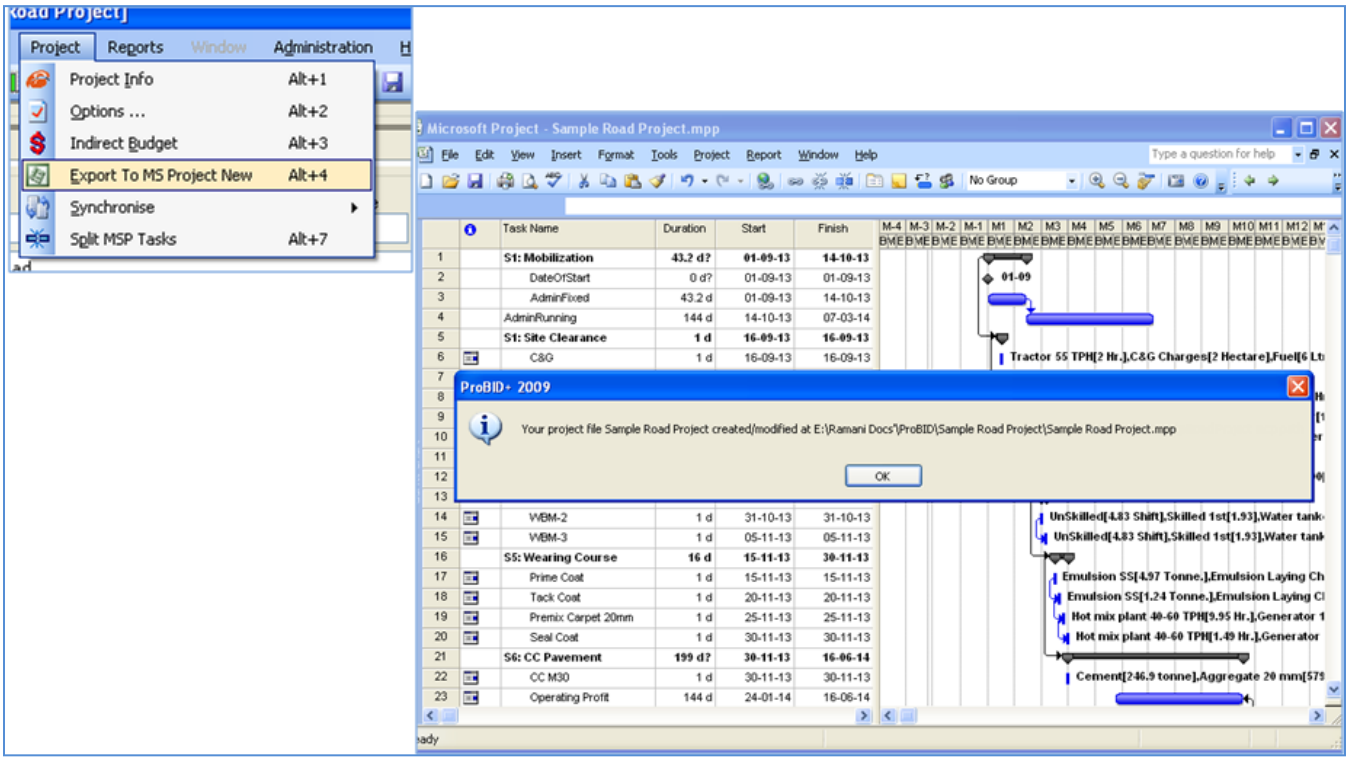


9.5 Network Diagram: CPM



9.6 Synchronize changes

170. When certain work has already been done in MSP after previous export process or few more items are to be appended to the MSP file from ProBID+, a synchronize command can replace the previous file without losing previously done work. ProBID+ also stores data from the MSP for re-export whenever necessary.

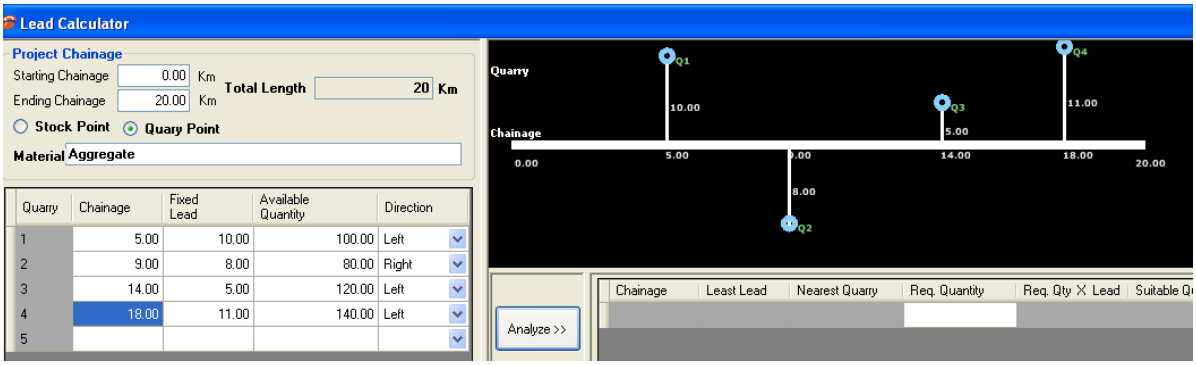


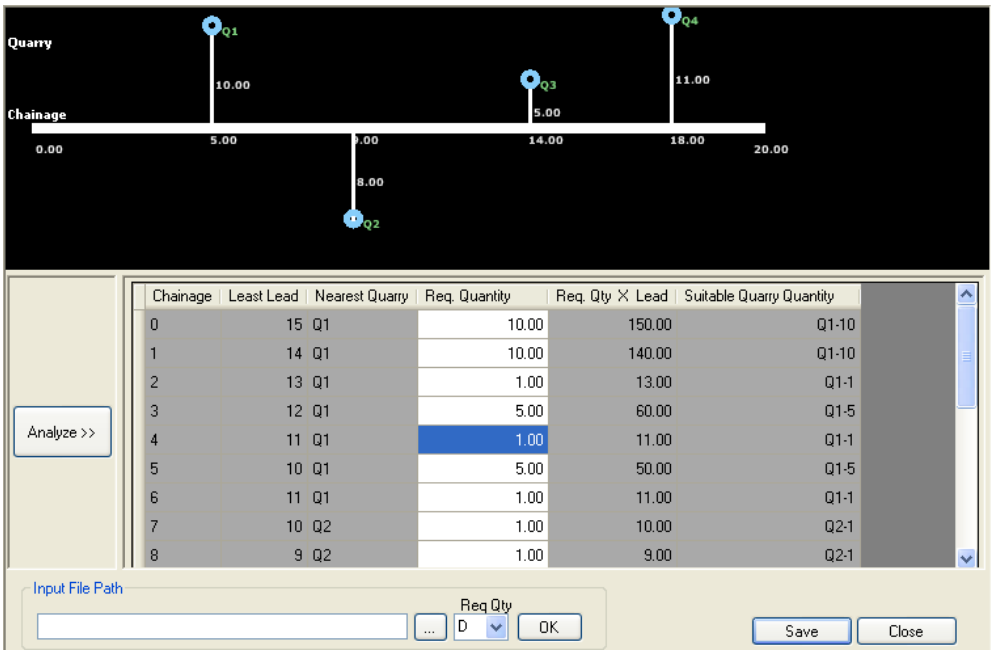
10 Costing Tools

10.1 Lead Calculator

171. Use Lead Calculator for estimating average and effective leads of the project.

172. Lead calculator can solve complex leads when the project contains an array of source quarries for same item. Estimating this in Excel without writing algorithms is next to impossible. Therefore use of this feature enables/directs project teams to manage sources. Using this feature can save costs as high as 10-15 % of Task costs in comparison to not being.





Chainage	Least Lead	Nearest Quarry	Req. Quantity	Req. Qty X Lead	Suitable Quarry Quantity
0	15	Q1	10.00	150.00	Q1-10
1	14	Q1	10.00	140.00	Q1-10
2	13	Q1	1.00	13.00	Q1-1
3	12	Q1	5.00	60.00	Q1-5
4	11	Q1	1.00	11.00	Q1-1
5	10	Q1	5.00	50.00	Q1-5
6	11	Q1	1.00	11.00	Q1-1
7	10	Q2	1.00	10.00	Q2-1
8	9	Q2	1.00	9.00	Q2-1

LEAD CALCULATOR

Material : *Aggregate*

Quary No	Chainage	Fixed Lead	Available Quantity	Chainage	Least Lead	Nearest Quarries	Req.Quantity	Req.Qty x Lead	Suitable Quarry Quantity
1	5	10	100	0	15	Q1	1	15	Q1-1
2	9	8	80	1	14	Q1	1	14	Q1-1
3	14	5	120	2	13	Q1	1	13	Q1-1
4	18	11	140	3	12	Q1	1	12	Q1-1
				4	11	Q1	1	11	Q1-1
				5	10	Q1	1	10	Q1-1
				6	11	Q1	1	11	Q1-1
				7	10	Q2	1	10	Q2-1
				8	9	Q2	1	9	Q2-1
				9	8	Q2	1	8	Q2-1
				10	9	Q2	1	9	Q2-1
				11	8	Q3	1	8	Q3-1
				12	7	Q3	1	7	Q3-1
				13	6	Q3	1	6	Q3-1
				14	5	Q3	1	5	Q3-1
				15	6	Q3	1	6	Q3-1
				16	7	Q3	1	7	Q3-1
				17	8	Q3	1	8	Q3-1

a. **Total length**: Total length of a project spread in Kilometers.

b. **Quarry**: The material source from where construction material is mined extracted or obtained for the project.

c. **Fixed Lead**: An offset distance of a material quarry/source away from a particular project chainage point.

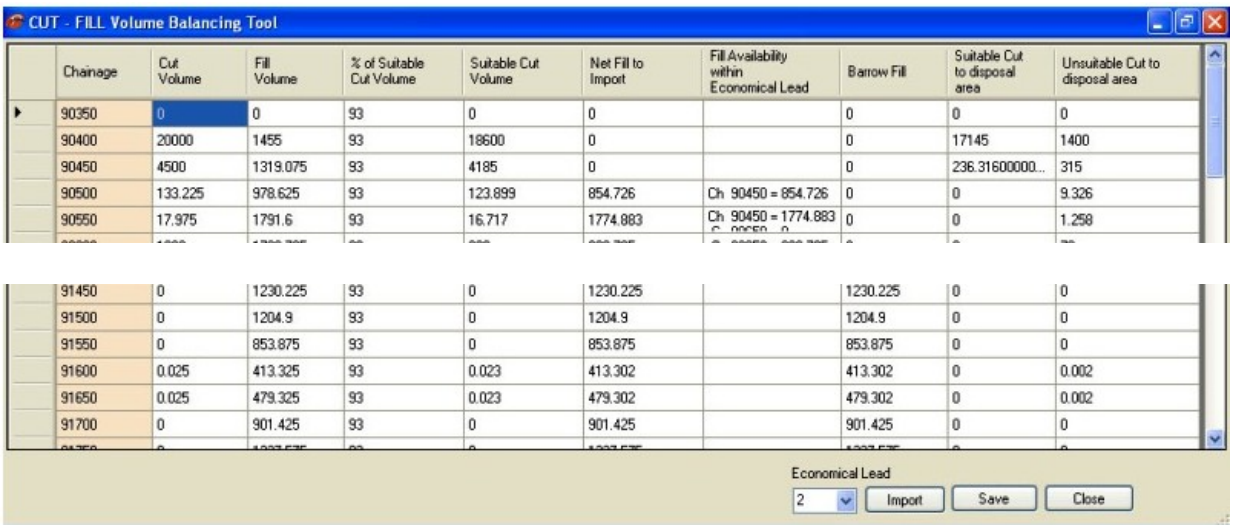
d. **Chainage**: Defined as the point in the project length to where the quarry road joins. If you have chainage wise varied quantities in the project you may use effective average lead after

determining the weighed mean of leads from the excel file generated by the ProBID+ for the Task under analysis.

e. **Material**: Name of Material to be carried from a source to the project site.

10.2 Cut-Fill Volume balancing tool

173. This tool is useful for the project managers while working on any linearly spread projects. Tool manages quantities of earth cuts and fills from road and barrow areas while considering wastages depending on soil suitability. This analysis is again not just possible to perform in Excel unless programmatically be handled though algorithms.



Chainage	Cut Volume	Fill Volume	% of Suitable Cut Volume	Suitable Cut Volume	Net Fill to Import	Fill Availability within Economical Lead	Barrow Fill	Suitable Cut to disposal area	Unsuitable Cut to disposal area
90350	0	0	93	0	0		0	0	0
90400	20000	1455	93	18600	0		0	17145	1400
90450	4500	1319.075	93	4185	0		0	236.31600000...	315
90500	133.225	978.625	93	123.899	854.726	Ch 90450 = 854.726	0	0	9.326
90550	17.975	1791.6	93	16.717	1774.883	Ch 90450 = 1774.883	0	0	1.258
91450	0	1230.225	93	0	1230.225		1230.225	0	0
91500	0	1204.9	93	0	1204.9		1204.9	0	0
91550	0	853.875	93	0	853.875		853.875	0	0
91600	0.025	413.325	93	0.023	413.302		413.302	0	0.002
91650	0.025	479.325	93	0.023	479.302		479.302	0	0.002
91700	0	901.425	93	0	901.425		901.425	0	0

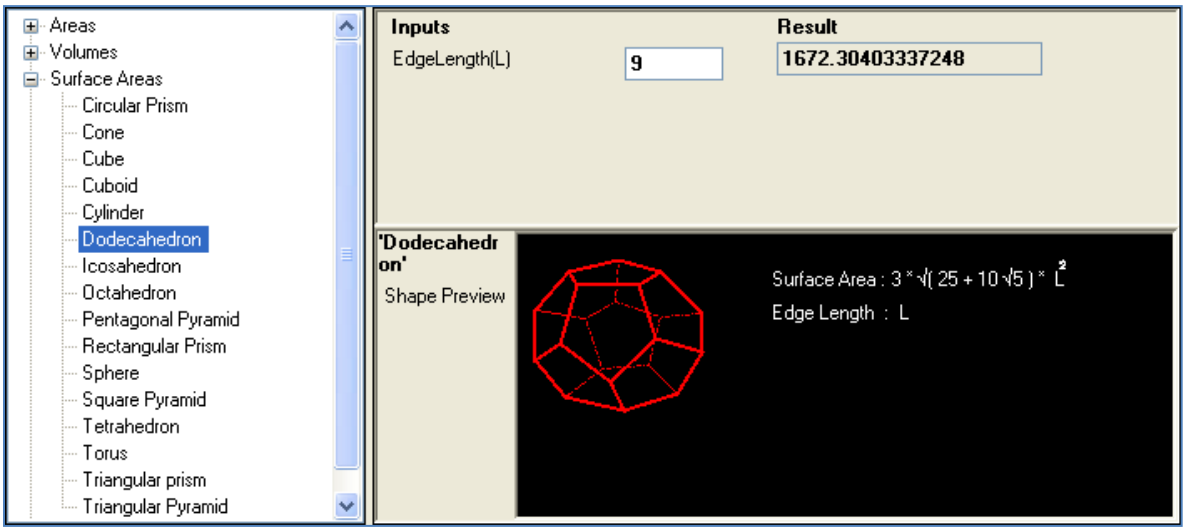
a. User can import cut and fill volumes from an existing Excel file.

b. Once required cut and fill volume data along with chainages are fed along with the % of soil suitability, the toll can create chainage wise output report. The report fixes how to economically manage cut & fill volumes at most minimum cost.

c. Reports indicate useful soil volumes from cuts while balancing the fill requirements for the nearest chainages, estimates barrow volume requirements for each chainage.

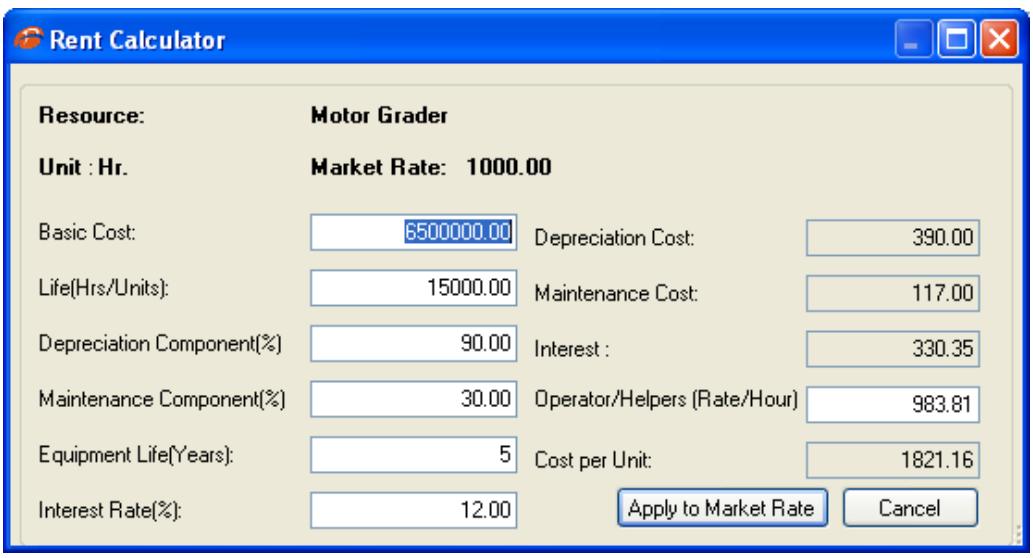
10.3 Area Calculator

174. While performing rate analysis, user regularly needs to find out areas, volumes and surface areas for different geometry with complicated shapes. This tool enables to calculate them.



10.4 Rent Calculator

175. While hiring a machine or estimating usage rate of own machine we may need to assess cost of engaging a machine per hour with components that controls the machine usage cost. The tool helps assessing such costs to allocate for the project assignments.



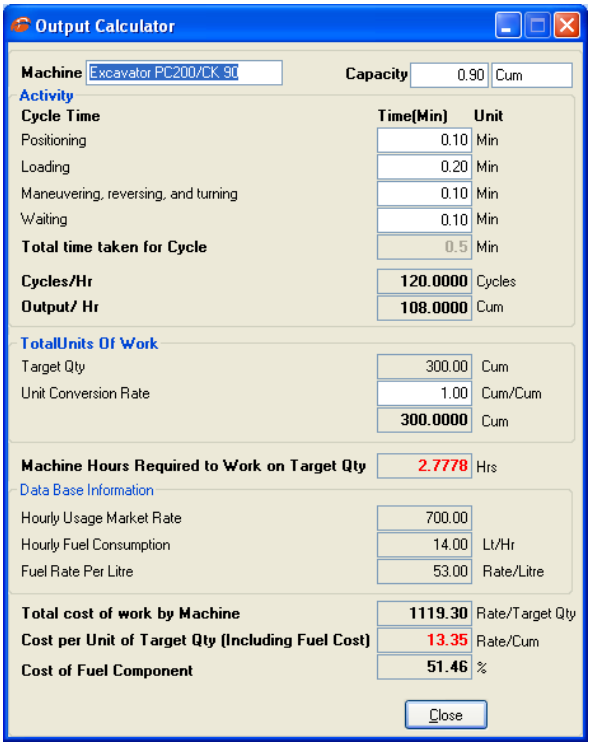
a. To calculate the rental charges to be debited to the project this tool is useful.

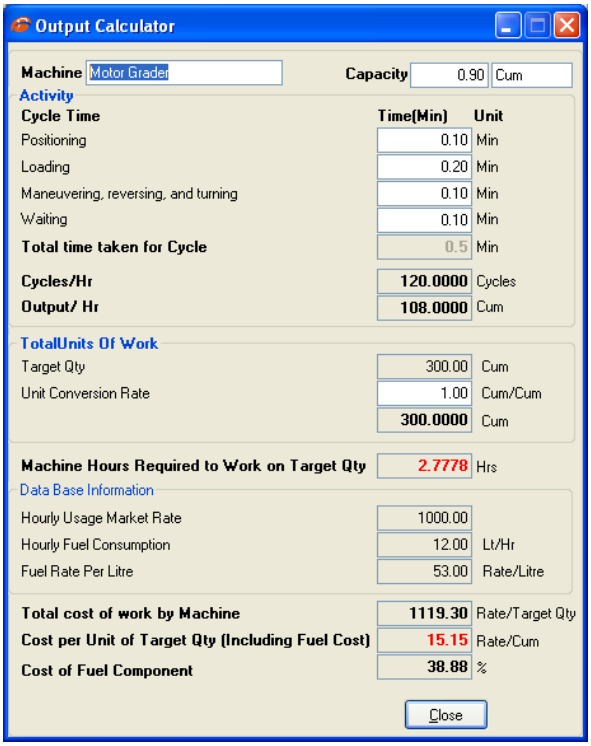
b. Double click on any machine in the Resource table in Analyzer form. Rent Calculator pops up with calculation of hourly cost of the Machine with the parameters.

c. Basic cost of machine, life in hours, depreciation component, maintenance component, and interest rate are required parameters to arrive usage rate of a machine.

10.5 Output calculator

176. Output Calculator Estimates Machine Output based on several project site parameters and machine cycle times. The tool is used to calculate physical output of a machine based on cycle times associated with the machine.





a. **Machine**: The machine resource name to work out output and costs of operation.

b. **Capacity**: Bucket or blade capacity of the machine. The text box appearing next to the capacity is units by which the machine can perform per cycle. For example 'tonnes' or 'cum'

c. **Loading Time**: The time required for loading the full capacity of the machine

d. **Positioning**: Time required in positioning the machine to start

e. **Maneuvering, Reversing & Turning**: Time required for all these operations by the machine

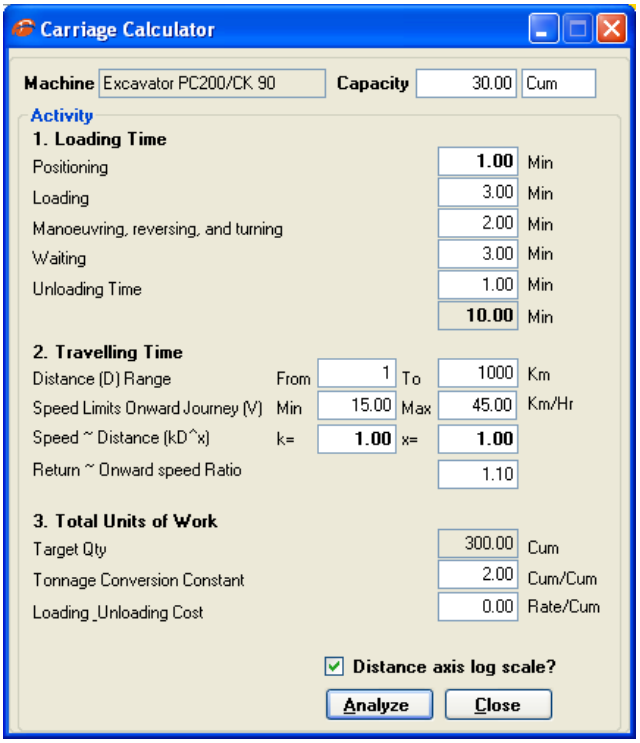
f. **Waiting**: Time required in waiting for a hauling truck

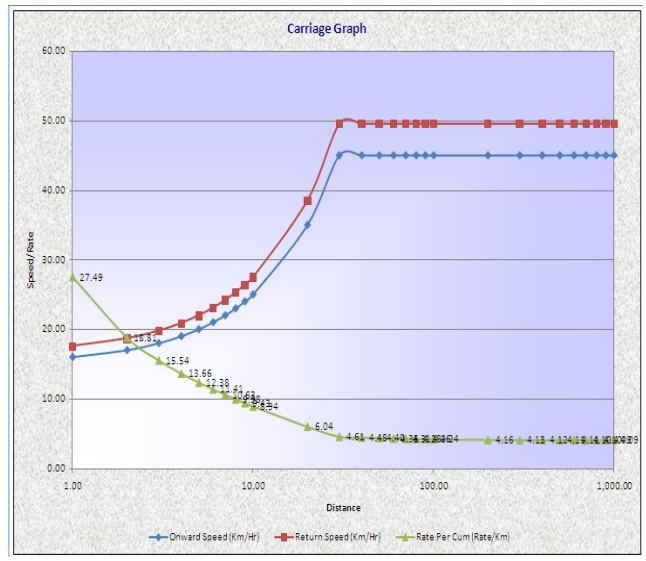
g. **Cycles /Hr or Output /Hr**: The calculated number of cycles or the output by the Machine.

h. **Target Qty:** The Target Qty of the Task being analyzed. This is read only.

10.6 Carriage calculator

177. Carriage Calculator is used for estimating number of transportation equipment required in a project and associated carriage costs. The tool is used to work out costs of transportation of materials from quarry source to the project site. The tool is applied for transporting machines like dumpers, tippers, trucks and trailers used in transporting materials.





Carriage Calculator

Excavator PC200/CK 90

		Unit	TIME(Min)								
	Capacity	Cum	30.00								
	Activity										
1.00	Loading Time										
	Positioning	Min	1.00								
	Loading	Min	3.00								
	Maneuvering, reversing & turning	Min	2.00								
	Waiting	Min	3.00								
	Unloading time	Min	1.00								
		Min	10.00								
2.00	Traveling time										
	Distance (D)	Km	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00
	Min Speed		15.00								
	Max Speed		45.00								
	Constant (K)		1.00								
	Exponent (X)		1.00								
	Speed Onward Journey (V)=MinSpeed+KD^X	Km/Hr	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00
	Time taken to travel with load	Min	3.75	7.06	10.00	12.63	15.00	17.14	19.09	20.87	22.50
	Return ~ Onward speed Ratio		1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Speed Return Journey	Km/hr	17.60	18.70	19.80	20.90	22.00	23.10	24.20	25.30	26.40
	Time taken to travel return	Min	3.41	6.42	9.09	11.48	13.64	15.58	17.36	18.97	20.45

a. The tool pops up when the user right clicks on a machine resource item in the assignment table.

b. **Machine:** The truck resource item for which the user intends to work out cost of transportation.

c. **Capacity:** Hauling capacity of the machine/truck for the calculator to base calculations. The text box appearing next to the capacity is units in which the capacity is expressed per cycle. For example 'tonnes' or 'cum'.

d. **Positioning:** Time required in positioning the hauling machine/truck

e. **Loading:** Time required in loading the hauling machine/truck by a separate loading machine

f. **Turning:** Time required in turning the hauling machine/truck

g. **Waiting:** Time required in waiting by the hauling machine/truck

h. **Unloading time**: Time required in unloading the hauling machine/truck

i. **Traveling Time**: To calculate traveling time the following inputs are required by the ProBID+

j. **Distance Range From**: Minimum distance involved in transportation/carriage

k. **Distance Range To:** Maximum distance involved in transportation/carriage

l. **Speed Limit Max:** Average maximum speed limit that the machine/truck can achieve in transportation.

m. **Speed Limit Min:** Average minimum speed limit that the machine/truck can achieve in transportation.

n. **Speed ~ Distance >> k:** The speed vs distance relation is set by two factors in a formula of k * D^x namely a linear and accelerating, where D is the distance. The linear multiplying factor being k.

o. **Speed ~ Distance >> x:** The speed Vs distance relation is set by two factors in a formula of k * D^x namely a linear and accelerating, where D is the distance. The accelerating factor being **x**.

p. **Return~Onward Speed Ratio:** The ratio of the return speed to onward speed.

q. **Target Qty:** The Target Qty of the Task being analyzed. This is read only and sets from the Analysis form.

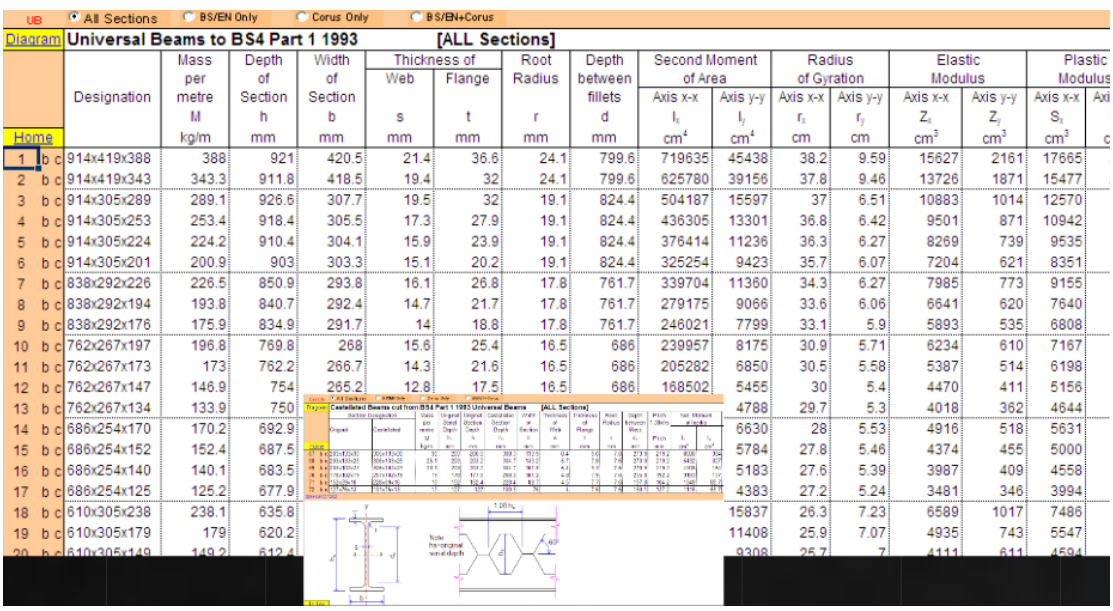
r. **Tonnage conversion:** The conversion factor is the capacity conversion of hauling machine/truck output that has different units than being used by the Task Units.

s. **Loading, unloading Cost:** An input by the user if cost of loading is to be added to the transportation cost.

t. **Distance axis log:** An option to be set in the graph being generated by the ProBID+ for the output distance to be in logarithmic scale.

10.7 Steel Tables

178. Steel tables are useful in estimating weights and areas of structural steel / rolled sections are being used while rate analysis. This feature is made available for ready reference only.



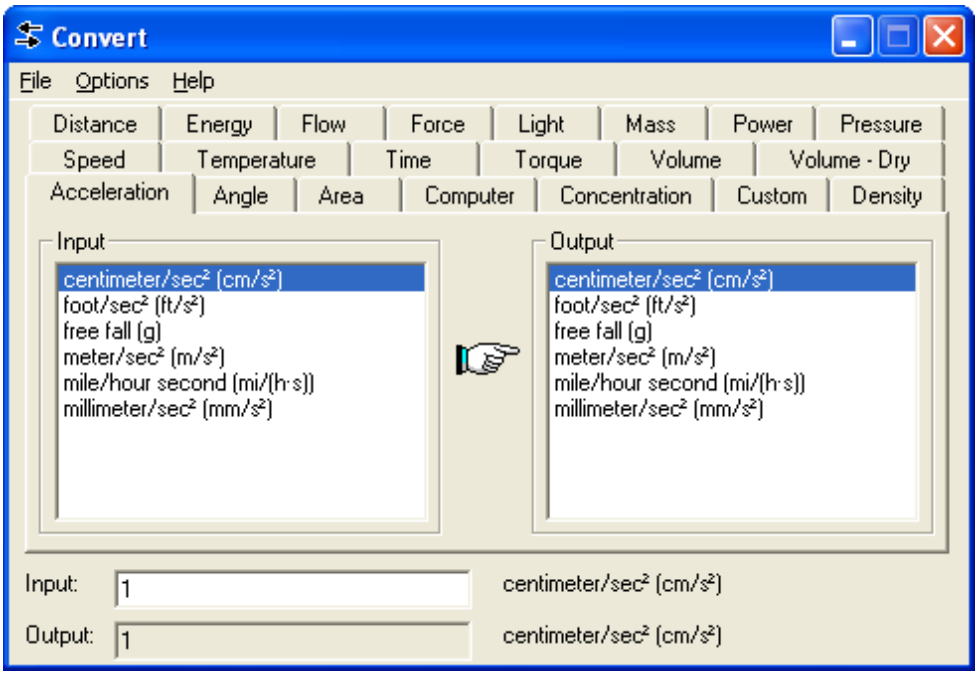
UB All Sections BS/EN Only Corus Only BS/EN+Corus

Diagram **Universal Beams to BS4 Part 1 1993 [ALL Sections]**

Home		Designation	Mass per metre M kg/m	Depth of Section h mm	Width of Section b mm	Thickness of Web s mm	Thickness of Flange t mm	Root Radius r mm	Depth between fillets d mm	Second Moment of Area Axis x-x I_x cm^4	Second Moment of Area Axis y-y I_y cm^4	Radius of Gyration Axis x-x r_x cm	Radius of Gyration Axis y-y r_y cm	Elastic Modulus Axis x-x Z_x cm^3	Elastic Modulus Axis y-y Z_y cm^3	Plastic Modulus Axis x-x S_x cm^3	Axi
1	b c	914x419x388	388	921	420.5	21.4	36.6	24.1	799.6	719635	45438	38.2	9.59	15627	2161	17665	
2	b c	914x419x343	343.3	911.8	418.5	19.4	32	24.1	799.6	625780	39156	37.8	9.46	13726	1871	15477	
3	b c	914x305x289	289.1	926.6	307.7	19.5	32	19.1	824.4	504187	15597	37	6.51	10883	1014	12570	
4	b c	914x305x253	253.4	918.4	305.5	17.3	27.9	19.1	824.4	436305	13301	36.8	6.42	9501	871	10942	
5	b c	914x305x224	224.2	910.4	304.1	15.9	23.9	19.1	824.4	376414	11236	36.3	6.27	8269	739	9535	
6	b c	914x305x201	200.9	903	303.3	15.1	20.2	19.1	824.4	325254	9423	35.7	6.07	7204	621	8351	
7	b c	838x292x226	226.5	850.9	293.8	16.1	26.8	17.8	761.7	339704	11360	34.3	6.27	7985	773	9155	
8	b c	838x292x194	193.8	840.7	292.4	14.7	21.7	17.8	761.7	279175	9066	33.6	6.06	6641	620	7640	
9	b c	838x292x176	175.9	834.9	291.7	14	18.8	17.8	761.7	246021	7799	33.1	5.9	5893	535	6808	
10	b c	762x267x197	196.8	769.8	268	15.6	25.4	16.5	686	239957	8175	30.9	5.71	6234	610	7167	
11	b c	762x267x173	173	762.2	266.7	14.3	21.6	16.5	686	205282	6850	30.5	5.58	5387	514	6198	
12	b c	762x267x147	146.9	754	265.2	12.8	17.5	16.5	686	168502	5455	30	5.4	4470	411	5156	
13	b c	762x267x134	133.9	750							4788	29.7	5.3	4018	362	4644	
14	b c	686x254x170	170.2	692.9							6630	28	5.53	4916	518	5631	
15	b c	686x254x152	152.4	687.5							5784	27.8	5.46	4374	455	5000	
16	b c	686x254x140	140.1	683.5							5183	27.6	5.39	3987	409	4558	
17	b c	686x254x125	125.2	677.9							4383	27.2	5.24	3481	346	3994	
18	b c	610x305x238	238.1	635.8							15837	26.3	7.23	6589	1017	7486	
19	b c	610x305x179	179	620.2							11408	25.9	7.07	4935	743	5547	
20	b c	610x305x149	149.2	612.4							9308	25.7	7	4111	611	4594	

10.8 Unit Convertor

179. A unit conversion toll is provided for user convenience.



11 Indirect Budgeting

11.1 Understanding Concept

180. Project costs that do not directly contribute to performance of a Project are termed as indirect budgeted costs. These are based on certain percentages of the direct budget/costs. Project requires machinery and men to mobilize, maintain and setting up contractors camps, laboratory and other facilities in performance of a Project. In other words they are called enabling works to perform main works.

181. A budget prepared while taking in to account of these expected incidentals is called indirect budgeting.

11.1.1 Indirect Budget Heads

182. Following are the main heads of budget

a. Admin Fixed

b. Admin Running

c. Operating profit/margin

11.1.2 Default Values:

183. ProBID+ by default sets indirect resources for each Indirect Budget Head. These resources are different than the direct resources assigned for project Tasks/WBS.

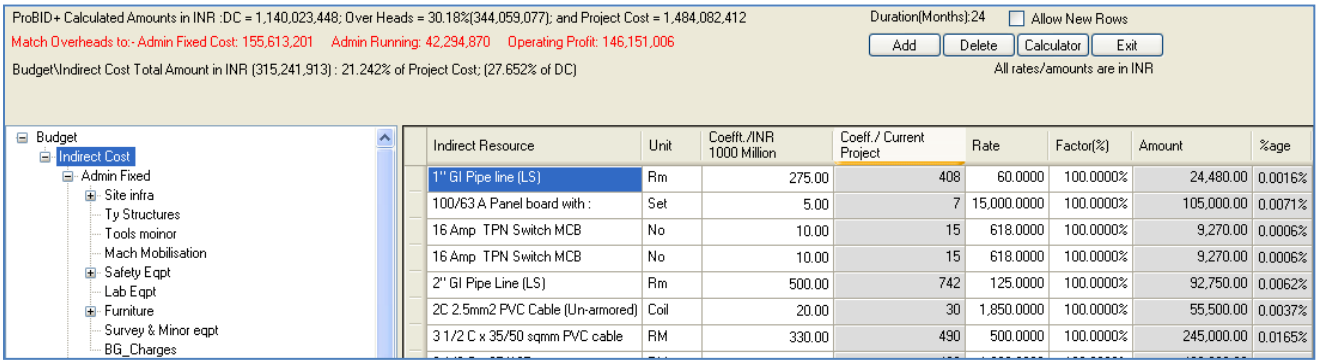
184. ProBID+ calculates indirect budgets for each budget head to perform a project worth 1000 Million (1 billion) as a benchmark scale to calculate indirect budget. ProBID+ compares this benchmark and proportionately prepares an indirect budget based on cost and time factors for your Project.

185. The user needs to estimate and/or adjust his/her indirect budget costs to the percentage of overheads being loaded on the Project in Options under Project Menu in to three major heads viz, Admin Fixed, Admin Running and Contractor Profit.

11.2 Interface:

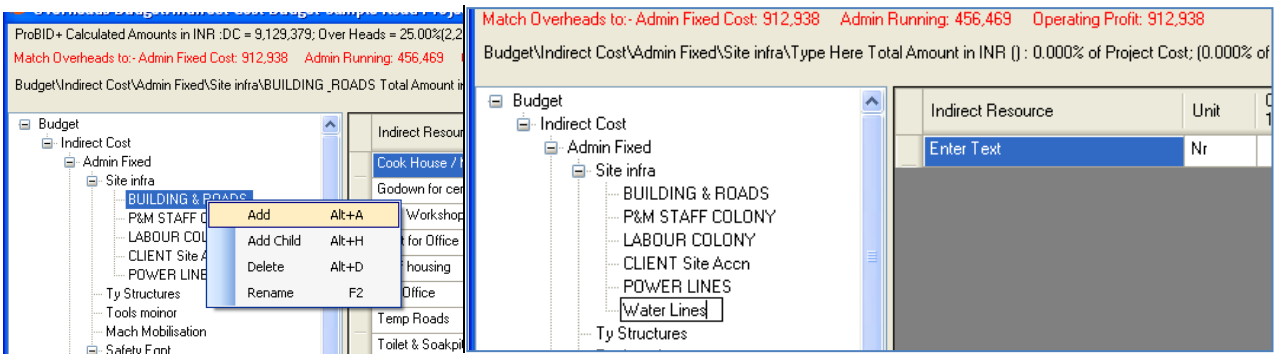
186. Project menu >> select Indirect Budget

187. ProBID+ opens Overheads Budget/Indirect Cost Budget window with default budget heads.



11.2.1 Add/Edit heads of expenditure

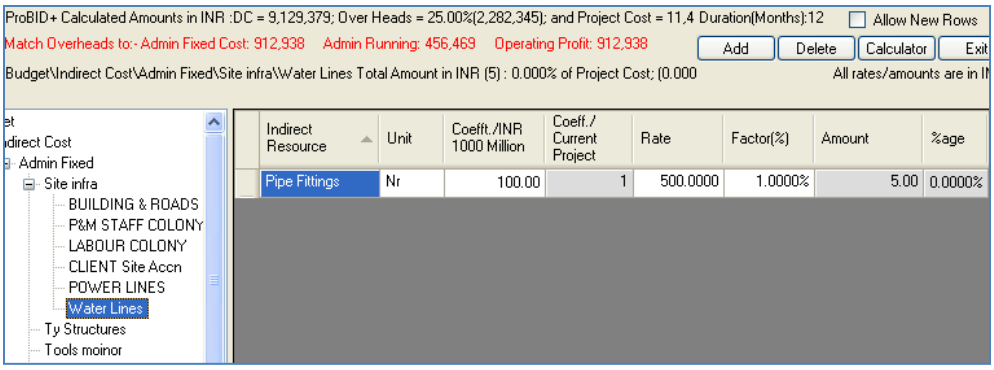
188. **Add head:** Tree view >> Select head >> Add button to add new item in the list at the end of the selected row header in the tree view. For example we add 'Water Lines' head as under.



189. **Delete head:** To remove a budget head or an indirect resource from the budget table, click on the row header of the budget head press Delete button.

11.2.2 Add/Edit indirect Resource:

190. On adding a head, program prompts for adding an indirect resource. Add a resource at 'Enter Text' prompt. For example let us add *'Pipe fittings'* under the *'Water Lines'* head. Set units as *Nr*, enter **Coeff/INR 1000 million** as *100*, Rate as *500* and factor as 1%. Program calculates budget for the current project based on the scale set.



11.3 How to calculate Indirect Budget

191. Change default **Coefficient /INR 1000 million** *for example 100 Nr*. This is a bench mark scale for expenditure. Program calculates **Coeff/ Current Project** based on the scale set.

192. Edit/Enter Rate of the indirect resource and Factor% fields as per prevailing market rates. Amount and %age of budget is calculated by the program, for example case the values are 5.00 and 0.000%

11.3.1 Repeat process for all heads

193. Repeat above steps to prepare a realistic budget suiting project requirements. Adjust/match each of the major heads Admin Running, Admin Fixed and Operating Profit as project overheads until they match the constants provided in the Options menu to match Project Cost. Alternatively you may modify the three major head values in the Options Menu to match the Indirect Budget costs.

ProBID+ Calculated Amounts in INR :DC = 1,140,023,448; Over Heads = 30.18%(344,059,077); and Project Cost = 1,484,082,412
Match Overheads to:- Admin Fixed Cost: 155,613,201 Admin Running: 42,294,870 Operating Profit: 146,151,006
Budget\Indirect Cost\Admin Running Total Amount in INR (133,009,218) : 8.962% of Project Cost; (11.667% of DC)

Duration(Months):24 Allow New Rows
Add Delete Calculator Exit
All rates/amounts are in INR

- Budget
  - Indirect Cost
    - Admin Fixed
      - Site infra
      - Ty Structures
      - Tools moinor
      - Mach Mobilisation
      - Safety Eqpt
        - STAFF
        - Unskilled LABOUR
        - SEMI-SKILLED
        - SKILLED
        - GENERAL
      - Lab Eqpt
      - Furniture
      - Survey & Minor eqpt
      - BG_Charges
    - Admin Running
      - SubContractorProfit
      - HO/HO Overheads

Indirect Resource	Unit	Coefft./INR 1000 Million	Coeff./ Current Project	Rate	Factor(%)	Amount	%age
Accounts Asst.	Nr	0.50	1	11,000.0000	84.0000%	221,760.00	0.0149%
Accounts Officer (Commercial)	Nr	0.50	1	20,000.0000	93.0000%	446,400.00	0.0301%
Adjustable Amount	Nr.	0.50	1	1,521.0000	4.1660%	1,521.00	0.0001%
Admin. Asst.	Nr	0.50	1	12,000.0000	84.0000%	241,920.00	0.0163%
Admin. Officer	Nr	0.50	1	16,500.0000	84.0000%	332,640.00	0.0224%
Ambulance	Veh	1.00	1	45,000.0000	93.0000%	1,004,400.00	0.0677%
Assistants	Nr	2.00	3	10,000.0000	84.0000%	604,800.00	0.0408%
Asst. cooks	Nr	2.00	3	4,000.0000	84.0000%	241,920.00	0.0163%
Asst. Engineer	Nr	2.00	3	17,600.0000	84.0000%	1,064,448.00	0.0717%
Asst. Enginer - Electrical	Nr	1.00	1	20,000.0000	84.0000%	403,200.00	0.0272%
Asst. Security Officer	ManMont	1.00	1	12,000.0000	93.0000%	267,840.00	0.0180%
Asstt. Surveyor	Nr	1.00	1	6,500.0000	84.0000%	131,040.00	0.0088%
Car for Project Manager	No	1.00	1	65,000.0000	93.0000%	1,450,800.00	0.0978%

11.4 Match major head cost

194. In the image red colored text indicate major head wise costs estimated, while analyzing Project Tasks on the Analyzer Form, with flat percentages. Admin Fixed cost from that flat percentage on direct cost is Rs.38,961,189. Indirect budgeting tool estimated this at 38,833,859 (2.990%) of the Direct Cost (DC). Comparison between two values is more or less matching and can be taken as OK.

Overheads Budget/Indirect Cost Budget-NH_2 LANE_Package
ProBID+ Calculated Amounts in INR :DC = 1,298,706,304; Over Heads = 28.5%(370,131,297); and CA = 1,668,837,352
Match Overheads to:- Admin Fixed Cost: 38,961,189 Admin Running: 175,325,351 Operating Profit: 155,844,756
Budget\Indirect Cost\Admin Fixed Total Amount in INR (38,833,859) : 2.327% of CA; (2.990% of DC)

- Budget
  - Indirect Cost
    - Admin Fixed
    - Admin Running
    - Operating Profit

Description	Unit	Coefft./INR 1000 Million	Coe Proj
1" GI Pipe line (LS)	Rm	275.00	
100/63 A Panel board with :	Set	5.00	

195. Similarly for the other two major heads the costs are matched to bring the project costs as arrived in the Analyzer From.

ProBID+ Calculated Amounts in INR :DC = 1,140,023,448; Over Heads = 30.18%(344,059,077); and Project Cost = 1,484,082,412
Match Overheads to:- Admin Fixed Cost: 155,613,201 Admin Running: 42,294,870 Operating Profit: 146,151,006
Budget\Indirect Cost\Operating Profit Total Amount in INR (148,408,241) : 10.000% of Project Cost; (13.018% of DC)

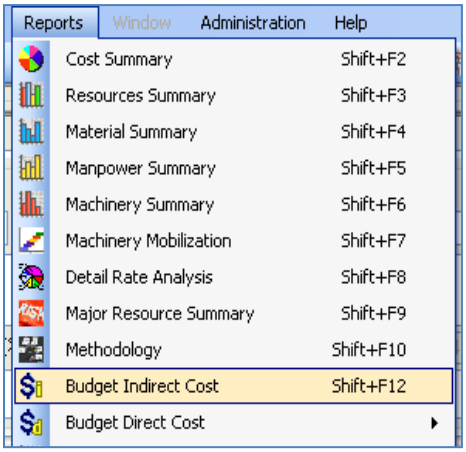
Duration(Months):24 Allow New Rows
Add Delete Calculator Exit
All rates/amounts are in INR

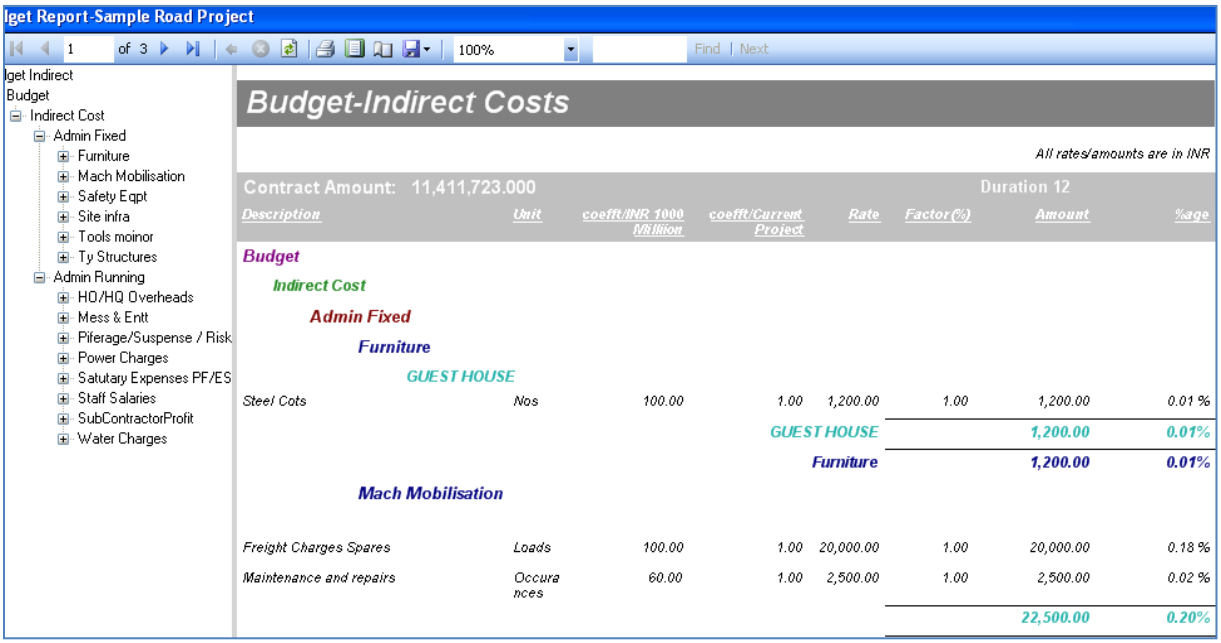
- Budget
  - Indirect Cost
    - Admin Fixed
    - Admin Running
    - Operating Profit

Indirect Resource	Unit	Coefft./INR 1000 Million	Coeff./ Current Project	Rate	Factor(%)	Amount
Profit	%CA	1,000,000,000.00	1,484,082,412	1.0000	10.0000%	148,40

11.5 Reports of Indirect Costs

196. Follow Reports >> Indirect Cost to view reports for the budgets so prepared in above steps. The report shows indirect costs associated in establishing and running administration to execute a project. These costs cannot be attributable to direct costs of any Tasks.



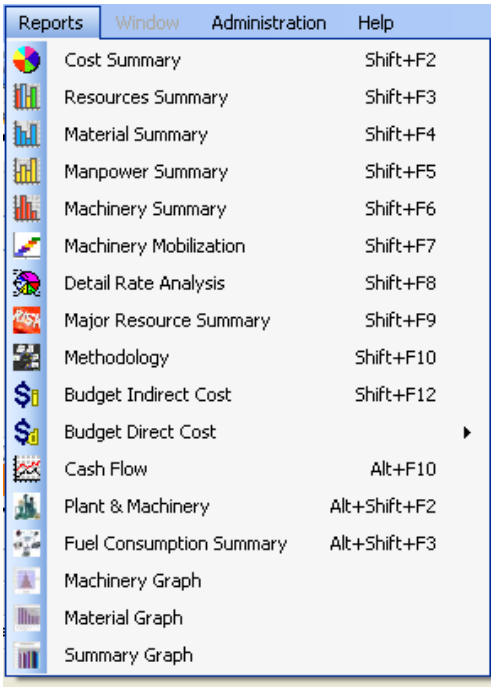


Piferage/Suspense / Risk							
iferage/Suspense / Risk	%CA	1,000,000,000.00	11,411,723.00	1.00	0.00	14,835.24	0.13 %
						14,835.24	0.13%
				Piferage/Suspense / Risk		14,835.24	0.13%
Power Charges							
ower Supply	kWH	50,000.00	571.00	5.00	0.93	31,861.80	0.28 %
						31,861.80	0.28%
				Power Charges		31,861.80	0.28%
Satutary Expenses PF/ESI							
F - Basic Salary Considered as 40	Nos.	100.00	1.00	40.00	0.93	446.40	0.00 %
SI	Nos.	100.00	1.00	120.00	0.93	1,339.20	0.01 %
						1,785.60	0.02%

				Power Charges		31,861.80	0.28%
Satutary Expenses PF/ESI							
F - Basic Salary Considered as 40	Nos.	100.00	1.00	40.00	0.93	446.40	0.00 %
SI	Nos.	100.00	1.00	120.00	0.93	1,339.20	0.01 %
						1,785.60	0.02%
				Satutary Expenses PF/ESI		1,785.60	0.02%
Staff Salaries							
INCREMENTS & INSENTIVES							
centive for Best Work - Avg.	Nr	50.00	1.00	5,000.00	0.10	6,000.00	0.05 %
crement in May Month - Avg.	Nr	100.00	1.00	1,500.00	0.10	1,800.00	0.02 %
				INCREMENTS & INSENTIVES		7,800.00	0.07%
				Staff Salaries		7,800.00	0.07%

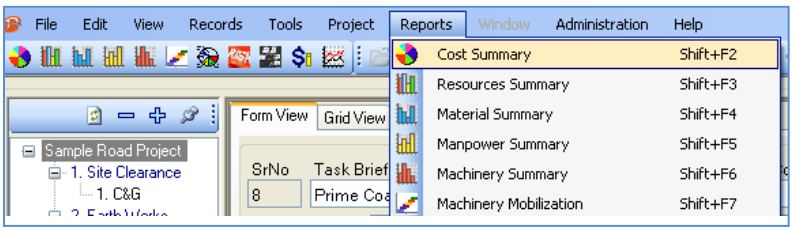
12 Project Reports

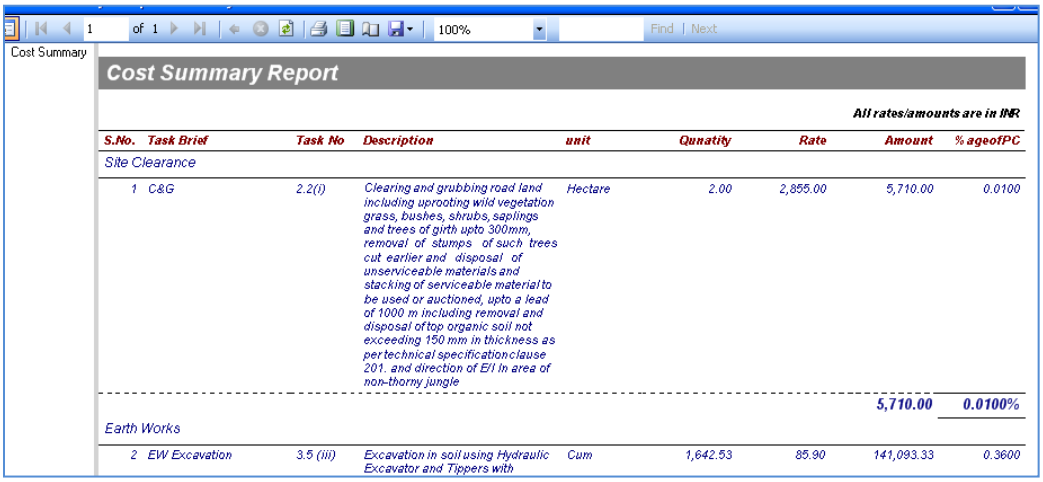
197. An array of highly useful reports is generated by ProBID+. These reports are useful for several functional requirements. For procurement department, material reports may be useful while, for equipment department machinery related deployments and fuel budgets may be required. For engineering department subcontract items and cost estimation, tendering and so on may be required.



12.1 Cost summary

198. The report shows task based work-break-down structure of the project with unit costs and percentage with respect to the whole project cost



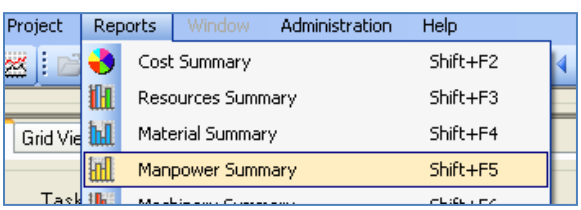


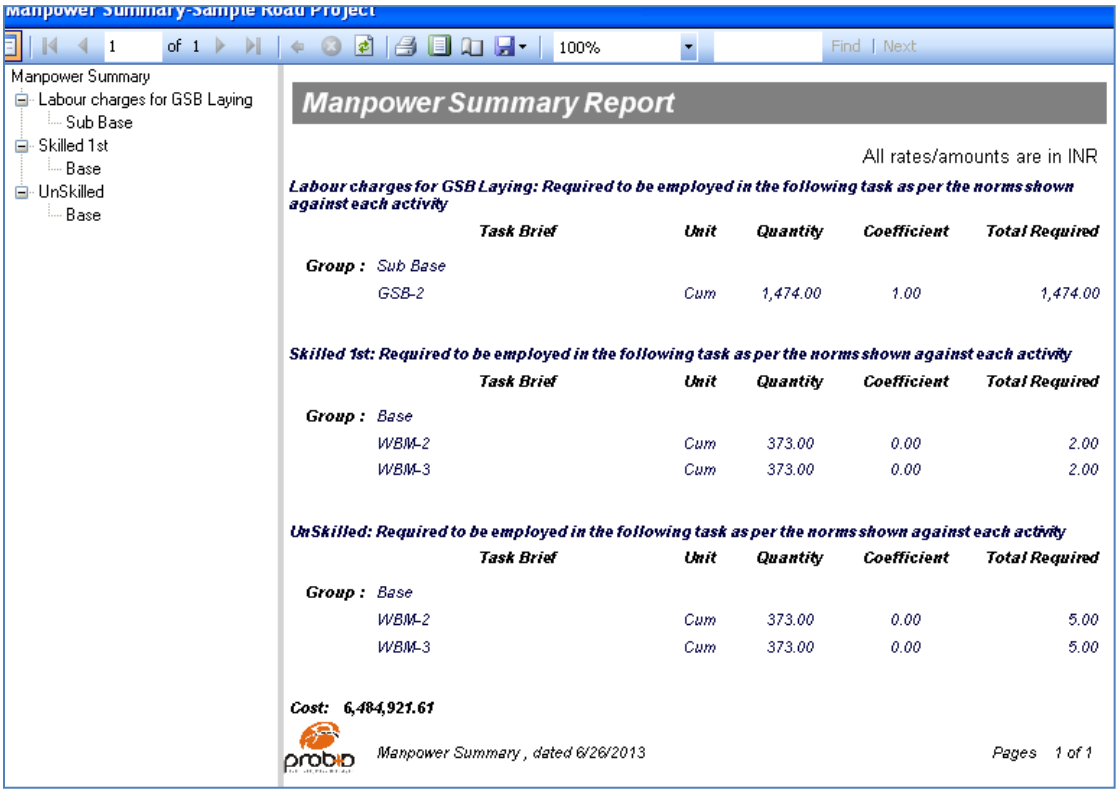
Cost Summary

	Earth Works							
	2	*EW Excavation*	3.5 (iii)	*Excavation in soil using Hydraulic Excavator and Tippers with disposal upto 1000 m Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades, and cross sections and transporting to the embankment location with a lift upto 1.5m and lead upto 1000 m as per technical specification clause 302.3 and direction of E/I*	Cum	1,642.53	85.90	141,093.33	0.3600
	3	*Emb Borrow 1000m*	3.4 (i)	*Construction of Embankment with Material obtained from Borrow Pits (1000 m lead) Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5m transporting to site, spreading, grading to required slope and compacting to meet requirement of tables 300.1 and 300.2 with lead up to 1000m as per technical specification clause 301.5 with all taxes and direction of E/I*	Cum	6,000.00	92.58	555,450.00	1.4400
	4	*Sub Grade 1000m*	3.14 (ii)	*With 1000 m Lead*	Cum	3,700.00	109.48	405,057.50	1.0500
								1,101,600.83	**2.8500%**
	Sub Base								
	5	*GSB-2*	4.1 (ii)	*Granular Sub-base with Well Graded Material (Table 400.1) aggregates Doriganj Coarse Sand Construction of granular sub-base by providing well graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with*	Cum	1,473.96	3,312.01	4,881,775.86	12.6300

12.2 Manpower Summary

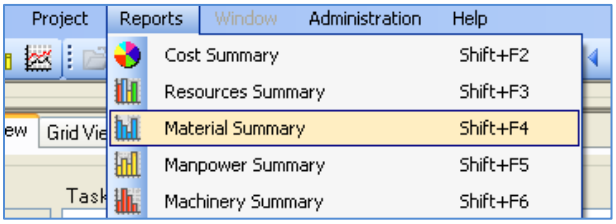
199. For HR department this report may be important for arranging manpower recruitments and making other living and admin arrangements etc.





12.3 Material Summary

200. The report indicates the cost break up of all materials required for the project. This report also shows Task wise requirement with assignment/Coefficient. Risk analysis and cost control becomes simpler with this kind of summary.



Material Summary Report-Sample Road Project

1 of 1 100% Find | Next

Material Summary
- Aggregate 10 mm
- Aggregate 20 mm
- Aggregate 63 mm
- Bitumen 60/70
- Cement
- Coarse sand
- DustCrusher
- Earth/Fine Sand
- Emulsion SS
- Furnace Oil
- GSB Material
- Sand Crushed

Material Summary Report

All rates/amounts are in INR

Aggregate 10 mm : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *Wearing Course*

Task Brief	Unit	Quantity	Coefficient	lead	Required
Premix Carpet 20mm	Sqm	4,972.50	0.09	100.00	437.58

Group: *CC Pavement*

Task Brief	Unit	Quantity	Coefficient	lead	Required
CC M30	Cum	676.60	0.59	100.00	398.84

Cost : **225,832.83** **836.42 Cum.**

Aggregate 20 mm : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *CC Pavement*

Task Brief	Unit	Quantity	Coefficient	lead	Required
CC M30	Cum	676.60	0.86	100.00	579.26

Cost : **289,632.28** **579.26 Cum.**

Aggregate 63 mm : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *Base*

Task Brief	Unit	Quantity	Coefficient	lead	Required
WBM-2	Cum	372.94	1.26	100.00	469.02
WBM-3	Cum	372.94	1.26	100.00	469.02

Cost : **281,414.31** **938.05 Cum.**

Bitumen 60/70 : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *Wearing Course*

Task Brief	Unit	Quantity	Coefficient	lead	Required
Premix Carpet 20mm	Sqm	4,972.50	1.40	0.00	6,961.50
Seal Coat	Sqm	4,972.50	0.00	0.00	2.98

Cost : 313,401.76 ***6,964.48 Kg***

Cement :Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *CC Pavement*

Task Brief	Unit	Quantity	Coefficient	lead	Required
CC M30	Cum	676.60	0.36	10.00	246.90

Cost : 1,234,498.25 ***246.90 tonne***

Coarse sand : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *CC Pavement*

Task Brief	Unit	Quantity	Coefficient	lead	Required
CC M30	Cum	676.60	0.60	1.00	408.33

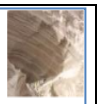
Cost : 21,727.45 ***408.33 cum***

DustCrusher :Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *Wearing Course*

Task Brief	Unit	Quantity	Coefficient	lead	Required
Premix Carpet 20mm	Sqm	4,972.50	0.03	100.00	159.12

Earth/Fine Sand : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material



Group: *Base*

Task Brief	Unit	Quantity	Coefficient	lead	Required
WBM-2	Cum	372.94	0.30	100.00	113.20
WBM-3	Cum	372.94	0.30	100.00	113.20

Cost : 5,659.88 ***226.40 Cum.***

Emulsion SS : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *Wearing Course*

Task Brief	Unit	Quantity	Coefficient	lead	Required
Prime Coat	Sqm	4,972.50	0.00	0.00	4.97
Tack Coat	Sqm	4,972.50	0.00	0.00	1.24

Cost : 248,625.00 ***6.22 Tonne.***

Furnace Oil : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

Group: *Wearing Course*

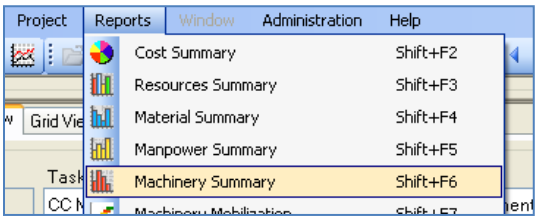
Task Brief	Unit	Quantity	Coefficient	lead	Required
Premix Carpet 20mm	Sqm	4,972.50	0.60	0.00	2,983.50
Seal Coat	Sqm	4,972.50	0.08	0.00	372.94

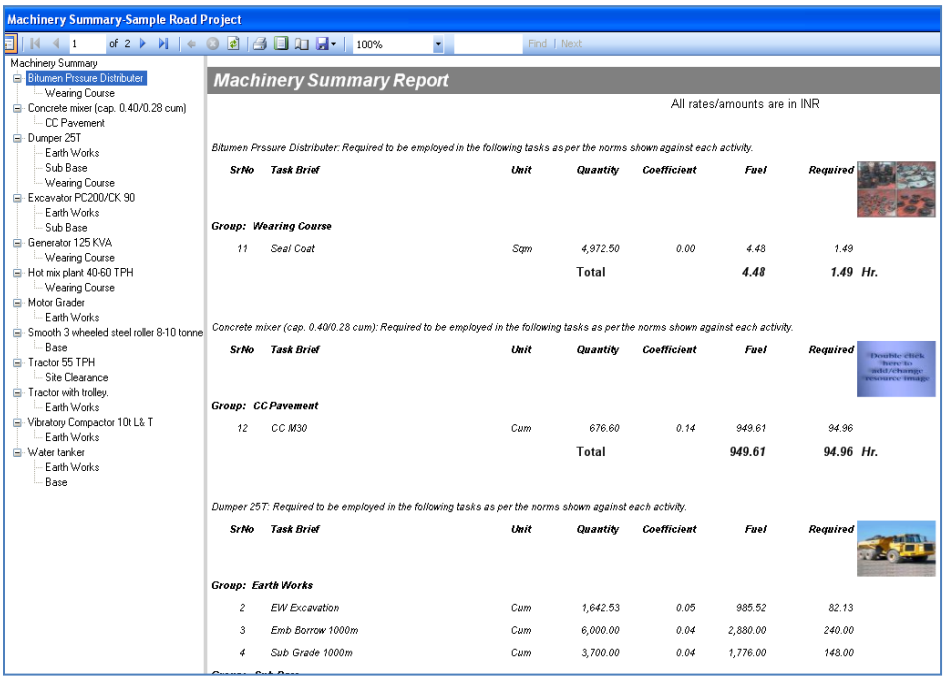
Cost : 151,039.69 ***3,356.44 Litre.***

GSB Material : Required to be employed in the following tasks as per the Coefficient shown against each activity.Material

12.4 Machinery Summary

201. The report indicates the cost break up of all machinery required for the project. This report also shows Task wise requirement with assignment/Coefficient. Risk analysis and cost control becomes simpler with this kind of summary.





Machinery Summary-Sample Road Project

1 of 2 100% Find | Next

Machinery Summary
- Bitumen Prssure Distributer
  - Wearing Course
- Concrete mixer (cap. 0.40/0.28 cum)
  - CC Pavement
- Dumper 25T
  - Earth Works
  - Sub Base
  - Wearing Course
- Excavator PC200/CK 90
  - Earth Works
  - Sub Base
- Generator 125 KVA
  - Wearing Course
- Hot mix plant 40-60 TPH
  - Wearing Course
- Motor Grader
  - Earth Works
- Smooth 3 wheeled steel roller 8-10 tonne
  - Base
- Tractor 55 TPH
  - Site Clearance
- Tractor with trolley.
  - Earth Works
- Vibratory Compactor 10t L& T
  - Earth Works
- Water tanker
  - Earth Works
  - Base

Machinery Summary Report

All rates/amounts are in INR

Bitumen Prssure Distributer: Required to be employed in the following tasks as per the norms shown against each activity.

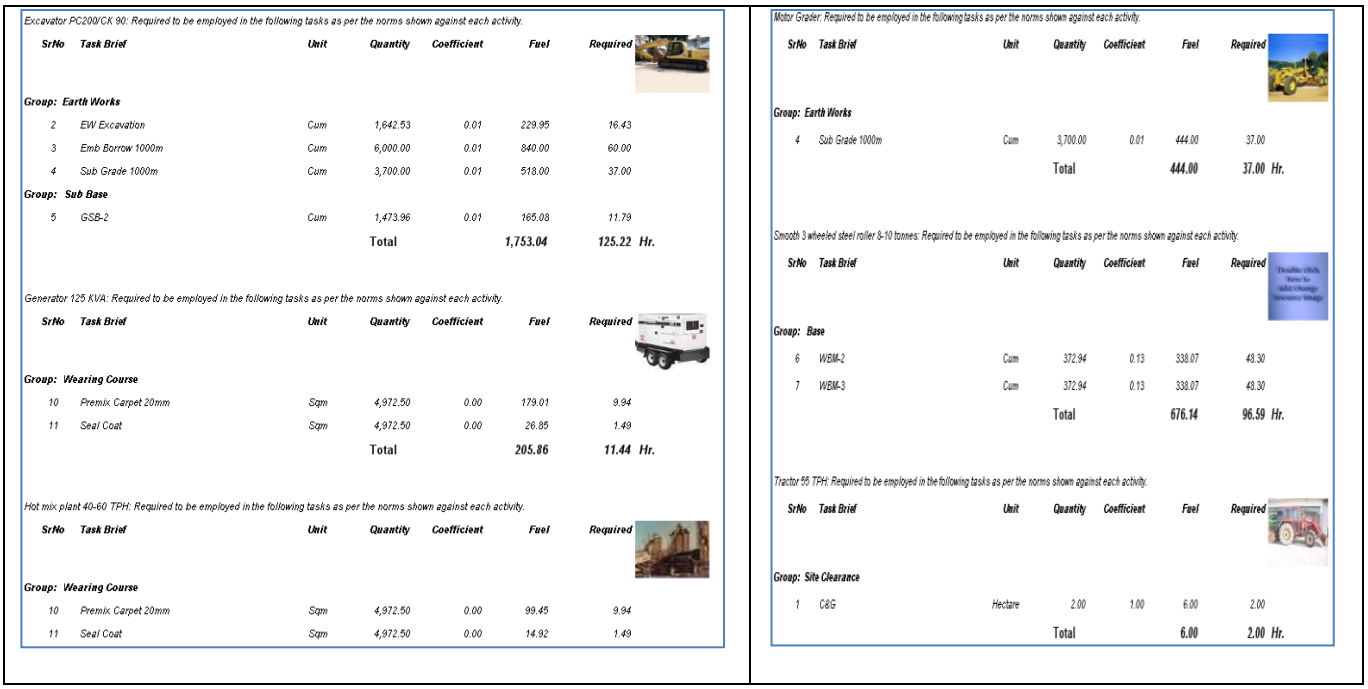
SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Wearing Course						
11	Seal Coat	Sqm	4,972.50	0.00	4.48	1.49
			Total		4.48	1.49 Hr.

Concrete mixer (cap. 0.40/0.28 cum): Required to be employed in the following tasks as per the norms shown against each activity.

SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: CC Pavement						
12	CC M30	Cum	676.60	0.14	949.61	94.96
			Total		949.61	94.96 Hr.

Dumper 25T: Required to be employed in the following tasks as per the norms shown against each activity.

SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Earth Works						
2	EW Excavation	Cum	1,642.53	0.05	985.52	82.13
3	Emb Borrow 1000m	Cum	6,000.00	0.04	2,880.00	240.00
4	Sub Grade 1000m	Cum	3,700.00	0.04	1,776.00	148.00



Excavator PC200/CK 90: Required to be employed in the following tasks as per the norms shown against each activity.

SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Earth Works						
2	EW Excavation	Cum	1,642.53	0.01	229.95	16.43
3	Emb Borrow 1000m	Cum	6,000.00	0.01	840.00	60.00
4	Sub Grade 1000m	Cum	3,700.00	0.01	518.00	37.00
Group: Sub Base						
5	GSB-2	Cum	1,473.96	0.01	165.08	11.79
			Total		1,753.04	125.22 Hr.

Generator 125 KVA: Required to be employed in the following tasks as per the norms shown against each activity.

SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Wearing Course						
10	Premix Carpet 20mm	Sqm	4,972.50	0.00	179.01	9.94
11	Seal Coat	Sqm	4,972.50	0.00	26.85	1.49
			Total		205.86	11.44 Hr.

Hot mix plant 40-60 TPH: Required to be employed in the following tasks as per the norms shown against each activity.

SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Wearing Course						
10	Premix Carpet 20mm	Sqm	4,972.50	0.00	99.45	9.94
11	Seal Coat	Sqm	4,972.50	0.00	14.92	1.49

Motor Grader: Required to be employed in the following tasks as per the norms shown against each activity.

SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Earth Works						
4	Sub Grade 1000m	Cum	3,700.00	0.01	444.00	37.00
			Total		444.00	37.00 Hr.

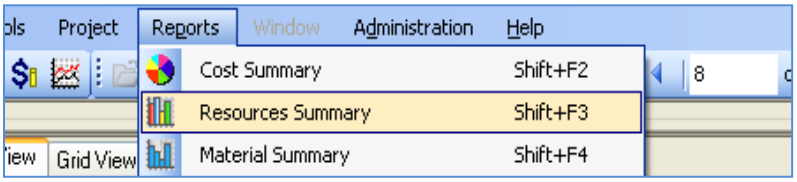
Smooth 3 wheeled steel roller 8-10 tonnes: Required to be employed in the following tasks as per the norms shown against each activity.

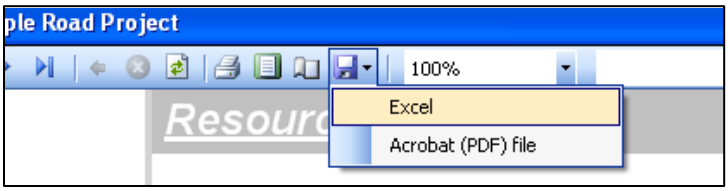
SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Base						
6	WBM-2	Cum	372.94	0.13	338.07	48.30
7	WBM-3	Cum	372.94	0.13	338.07	48.30
			Total		676.14	96.59 Hr.

Tractor 55 TPH: Required to be employed in the following tasks as per the norms shown against each activity.

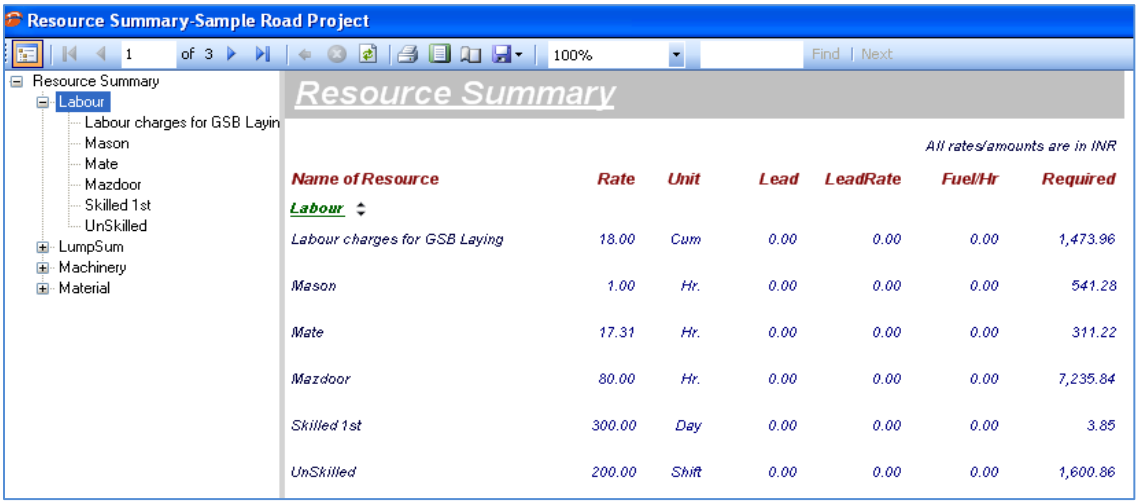
SrNo	Task Brief	Unit	Quantity	Coefficient	Fuel	Required
Group: Site Clearance						
1	C&G	Hectare	2.00	1.00	6.00	2.00
			Total		6.00	2.00 Hr.

12.5 Resource Summary





12.5.1 Manpower



12.5.2 Machinery

Resource Summary
- Labour
- LumpSum
- Machinery
  - Bitumen pressure distributor @ 1750 sqr
  - Concrete mixer (cap. 0.40/0.28 cum)
  - Dumper 25T
  - Excavator PC200/CK 90
  - Front end-loader 1 cum bucket capacity
  - Generator 125 KVA
  - Generator 33 KVA
  - Hot mix plant 40-60 TPH
  - Hydraulic self propelled chip spreader
  - Loader 1.7 cu.m Front End
  - Motor Grader
  - Paver finisher with sensor 5.5 m
  - Pneumatic Tyre Roller
  - Smooth 3 wheeled steel roller 8-10 tonn
  - Smooth wheeled roller 8-10 tonnes
  - Tipper 5.5cum capacity
  - Tractor 55 TPH
  - Tractor with trolley.
  - Vibratory Compactor 10t L& T
  - Water tanker
- Material

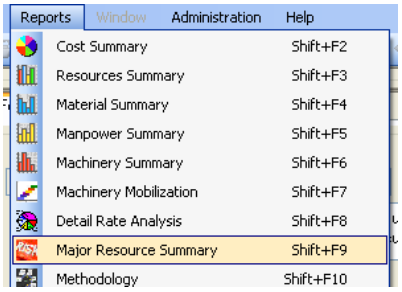
Hydraulic self propelled chip spreader	10.00	Hr.	0.00	0.00	1.00	2.91
Loader 1.7 cu.m Front End	450.00	Hr.	0.00	0.00	12.00	99.45
Motor Grader	1,000.00	Hr.	0.00	0.00	12.00	37.00
Paver finisher with sensor 5.5 m	985.00	Hr.	0.00	0.00	10.00	198.90
Pneumatic Tyre Roller	640.00	Hr.	0.00	0.00	8.00	99.45
Smooth 3 wheeled steel roller 8-10 tonnes	500.00	Hr.	0.00	0.00	7.00	96.59
Smooth wheeled roller 8-10 tonnes	3.90	Hr.	0.00	0.00	0.00	2.91
Tipper 5.5cum capacity	12.00	Hr.	0.00	0.00	0.00	2.91
Tractor 55 TPH	125.00	Hr.	0.00	0.00	3.00	2.00
Tractor with trolley.	125.00	Hr.	0.00	0.00	3.00	60.00
Vibratory Compactor 10t L& T	400.00	Hr.	0.00	0.00	8.00	196.45
Water tanker	150.00	Hr.	0.00	0.00	2.00	323.04

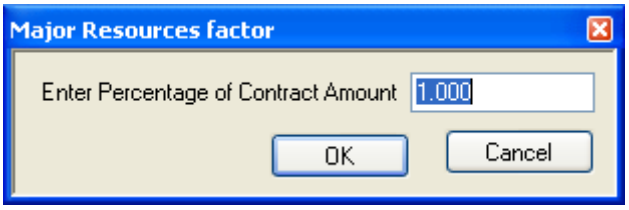
12.5.3 Material

Resource Summary
- Labour
- LumpSum
- Machinery
- Material
  - Aggregate 10 mm
  - Aggregate 20 mm
  - Aggregate 63 mm
  - Bitumen 60/70
  - Cement
  - Coarse sand
  - DustCrusher
  - Earth/Fine Sand
  - Emulsion SS
  - Furnace Oil
  - GSB Material
  - Sand Crushed

Tractor 55 TPH	125.00	Hr.	0.00	0.00	3.00	2.00
Tractor with trolley.	125.00	Hr.	0.00	0.00	3.00	60.00
Vibratory Compactor 10t L& T	400.00	Hr.	0.00	0.00	8.00	97.00
Water tanker	150.00	Hr.	0.00	0.00	2.00	323.04
Material						
Aggregate 10 mm	270.00	Cum.	100.00	3.50	0.00	836.42
Aggregate 20 mm	500.00	Cum.	100.00	3.50	0.00	579.26
Aggregate 63 mm	300.00	Cum.	100.00	3.23	0.00	938.05
Bitumen 60/70	45.00	Kg	0.00	0.00	0.00	6,964.48
Cement	5,000.00	tonne	10.00	4.00	0.00	246.90
Coarse sand	53.21	cum	1.00	1.00	0.00	408.33
DustCrusher	100.00	Cum.	100.00	3.50	0.00	215.06
Earth/Fine Sand	25.00	Cum.	100.00	0.00	0.00	226.40
Emulsion SS	40,000.00	Tonne.	0.00	0.00	0.00	6.22
Furnace Oil	45.00	Litre.	0.00	0.00	0.00	3,356.44
GSB Material	370.00	tonne	120.00	4.00	0.00	2,269.90
Sand Crushed	875.00	cum.	0.00	0.15	0.00	2,147.56

12.6 Risk management / Major Resources





202. Project cost is proportional to individual costs of several resources which when exceed certain percent of the project costs and when provisions given under contract conditions have variance as estimated the project is said to be risky. To identify such resources or expenses the report is useful.

203. For example, we assume that total cost of cement in a project has been estimated at 8% cost of the whole project, whereas, escalation factor provisioned in the contract caters only 5% of the project cost for reimbursement by the client then, any increase in the market rates of cement may not correctly compensate the contractor. Such tasks are identified by the report.

204. **Major Resource's factor:** User can key in a factor/fraction of total Contract Amount above which ProBID+ filters all costs associated for evaluating risks associated in either escalation or increase/decrease in quality and quantities of resources before bidding a project.

Major Resource

All rates/amounts are in INR

Name of Resource	ReqUnits	Unit	Rate	ResCosts	Cost Fct	Lead	LdRate	TptCosts	Tpt fct	Fuel/ Hr	Fuel Costs	Fuel fct
Material												
Aggregate 10 mm	437.58	Cum.	270.00	118,146.60	0.01	100	3.5	153153.00		0.00	0.00	
Furnace Oil	2,983.50	Litre.	45	134,257.50	0.01	0	0	0.0		0.00	0.00	
Aggregate 63 mm	938.05	Cum.	600	281,414.31	0.02	100	3.23	302989.41		0.00	0.00	
Emulsion SS	4.97	Tonne.	40000	198,900.00	0.02	0	0	0.00		0.00	0.00	
Aggregate 20 mm	579.26	Cum.	500	289,632.28	0.03	100	3.5	202742.60		0.00	0.00	
Bitumen 60/70	6,961.50	Kg	45	313,267.50	0.03	0	0	0.0		0.00	0.00	
GSB Material	2,269.90	tonne	370	839,862.41	0.07	120	4	1089551.23		0.00	0.00	
Cement	246.90	tonne	5000	1,234,498.25	0.11	10	4	9875.99		0.00	0.00	
Sand Crushed	2,147.56	cum.	875	1,879,114.76	0.16	0	0.15	0.00		0.00	0.00	
				5,289,093.60	**0.46**			**1,758,312.22**	**0.15**		**0.00**	**0.00**
LumpSum												
Pouring Charges - Concrete	199,418.95	Cum	1.00	199,418.95	0.02	0	0	0		0.00	0.00	
				199,418.95	**0.02**			**0.00**	**0.00**		**0.00**	**0.00**

Notes:

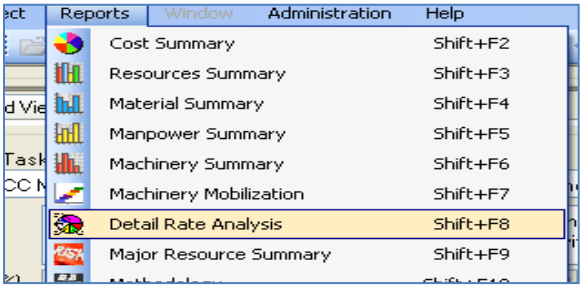
1.All factors shown are above 1 percentage of contract amount.

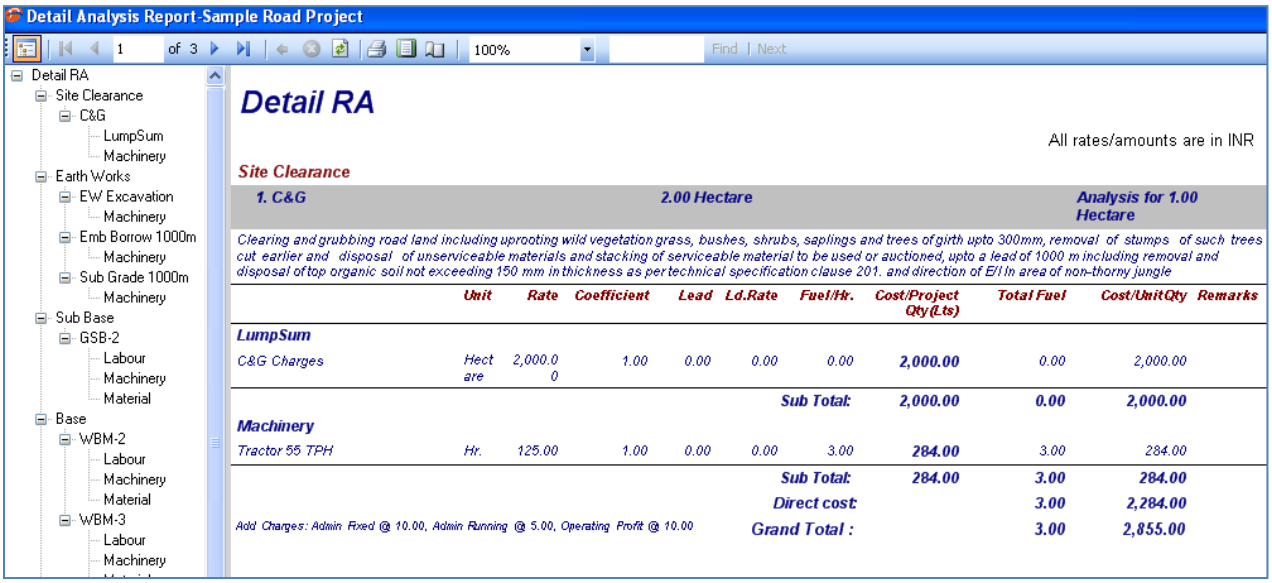
2. User may compare contract escallation factors for different components to see whether these factors are with in the range for planning a bidding strategy.

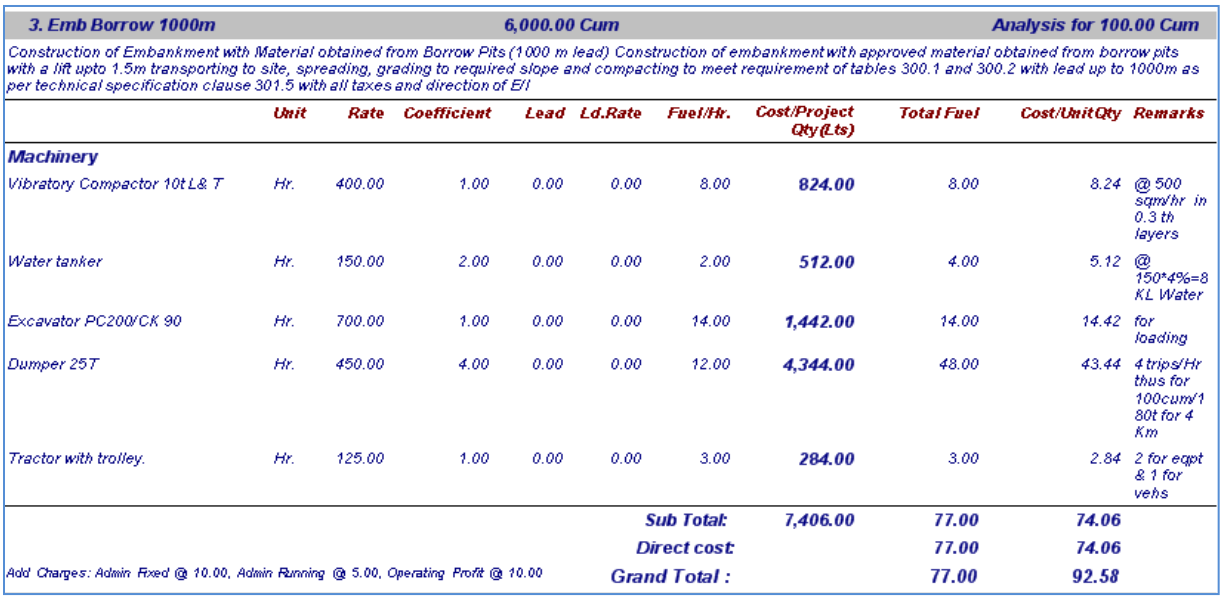
Major Resources, dated 7/3/2013 1 of 1

12.7 Detail Rate Analysis

205. The report indicates analysis of each task showing how a task is analyzed by assigning resources. Cost break up of all resources associated with a particular task are shown. It is important to review analysis of high valued tasks for balancing risks Vs cost control. This report is highly useful to manage project though ERP systems





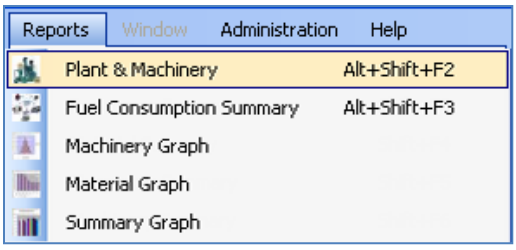


3. Emb Borrow 1000m — **6,000.00 Cum** — **Analysis for 100.00 Cum**

Construction of Embankment with Material obtained from Borrow Pits (1000 m lead) Construction of embankment with approved material obtained from borrow pits with a lift upto 1.5m transporting to site, spreading, grading to required slope and compacting to meet requirement of tables 300.1 and 300.2 with lead up to 1000m as per technical specification clause 301.5 with all taxes and direction of E/I

	Unit	Rate	Coefficient	Lead	Ld.Rate	Fuel/Hr.	Cost/Project Qty(Lts)	Total Fuel	Cost/UnitQty	Remarks
Machinery										
Vibratory Compactor 10t L& T	Hr.	400.00	1.00	0.00	0.00	8.00	**824.00**	8.00	8.24	@ 500 sqm/hr in 0.3 th layers
Water tanker	Hr.	150.00	2.00	0.00	0.00	2.00	**512.00**	4.00	5.12	@ 150*4%=8 KL Water
Excavator PC200/CK 90	Hr.	700.00	1.00	0.00	0.00	14.00	**1,442.00**	14.00	14.42	for loading
Dumper 25T	Hr.	450.00	4.00	0.00	0.00	12.00	**4,344.00**	48.00	43.44	4 trips/Hr thus for 100cum/180t for 4 Km
Tractor with trolley.	Hr.	125.00	1.00	0.00	0.00	3.00	**284.00**	3.00	2.84	2 for eqpt & 1 for vehs
						Sub Total:	**7,406.00**	**77.00**	**74.06**	
						Direct cost:		**77.00**	**74.06**	
Add Charges: Admin Fixed @ 10.00, Admin Running @ 5.00, Operating Profit @ 10.00						**Grand Total :**		**77.00**	**92.58**	

12.8 Plant & Machinery Report



Plant & Machinery Report

Fuel Rate : 53.00 Per Litre *All rates/amounts are in INR*

1 . Site Clearance

1. C&G — 2.00 Hectare

Clearing and grubbing road land including uprooting wild vegetation grass, bushes, shrubs, saplings and trees of girth upto 300mm, removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per technical specification clause 201. and direction of E/I In area of non-thorny jungle

Machinery	Rate/Hr	Required Hours	Litre/Hr	FuelRequired	FuelAmount
Tractor 55 TPH	125.00	2.00	3.000	6.00	318.00
		Total		6.00	318.00
		GroupTotal		6.00	318.00

2 . Earth Works

2. EW Excavation — 1,642.53 Cum

Excavation in soil using Hydraulic Excavator and Tippers with disposal upto 1000 m Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades, and cross sections and transporting to the embankment location with a lift upto 1.5m and lead upto 1000 m as per technical specification clause 302.3 and direction of E/I

Machinery	Rate/Hr	Required Hours	Litre/Hr	FuelRequired	FuelAmount
Excavator PC200/CK 90	700.00	16.43	14.000	229.95	12,187.57
Dumper 25T	450.00	82.13	12.000	985.52	52,232.45
		Total		1,215.47	64,420.03

		Total		4,620.00	244,860.00

4. Sub Grade 1000m — 3,700.00 Cum

With 1000 m Lead

Machinery	Rate/Hr	Required Hours	Litre/Hr	FuelRequired	FuelAmount
Vibratory Compactor 10t L& T	400.00	37.00	8.000	296.00	15,688.00
Motor Grader	1,000.00	37.00	12.000	444.00	23,532.00
Water tanker	150.00	74.00	2.000	148.00	7,844.00
Excavator PC200/CK 90	700.00	37.00	14.000	518.00	27,454.00
Dumper 25T	450.00	148.00	12.000	1,776.00	94,128.00
		Total		3,182.00	168,646.00
		GroupTotal		9,017.47	477,926.03

3 . Sub Base

5. GSB-2 — 1,473.96 Cum

Granular Sub-base with Well Graded Material (Table 400.1) aggregates Doriganj Coarse Sand Construction of granular sub-base by providing well graded material, spreading in unform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with three wheel 80-100 KN static roller capacity to achieve the desired density, complete as per technical specification clause 401 with all taxes and direction of E/I For Grading II Material

Machinery	Rate/Hr	Required Hours	Litre/Hr	FuelRequired	FuelAmount
Excavator PC200/CK 90	700.00	11.79	14.000	165.08	8,749.43
Dumper 25T	450.00	49.13	12.000	589.58	31,247.95
		Total		754.67	39,997.38
		GroupTotal		754.67	39,997.38

Fuel Consumption Summary - Bill wise

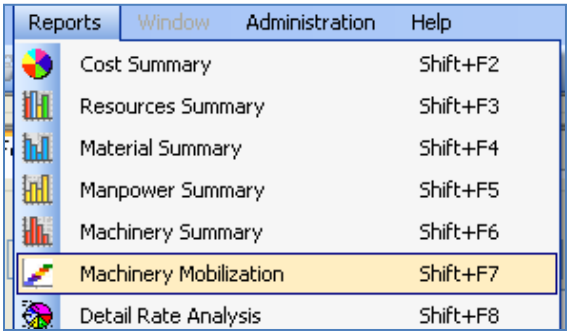
Fuel Rate: 53.00 per Litre.

section / Group	Litres	Fuel Cost
Site Clearance	6.00	318.00
Earth Works	9,017.47	477,926.03
Sub Base	754.67	39,997.38
Base	934.21	49,513.38
Wearing Course	995.99	52,787.56
CC Pavement	949.61	50,329.54
	12,657.96	670,871.89

Fuel Consumption Summary - Bill wise, dated 7/1/2013 Page 1 of 1

12.9 Machinery Mobilization & Peak requirements

206. This is the report to enable planning procurement and mobilization of equipment to the work site to perform the project to meet project schedule. It also indicate peak requirement and costs associated with such peak number construction firms to plan finances or exercising equipment hiring option to perform the project.



Machinery Mobilization Report

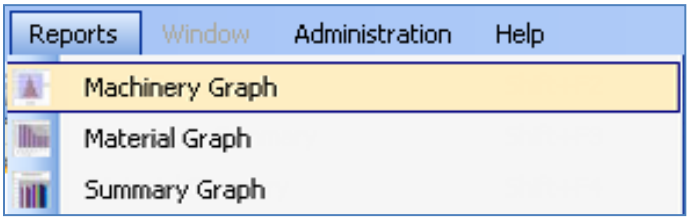
The report assumes 16 Hrs of working per day in double shift for all the machinery

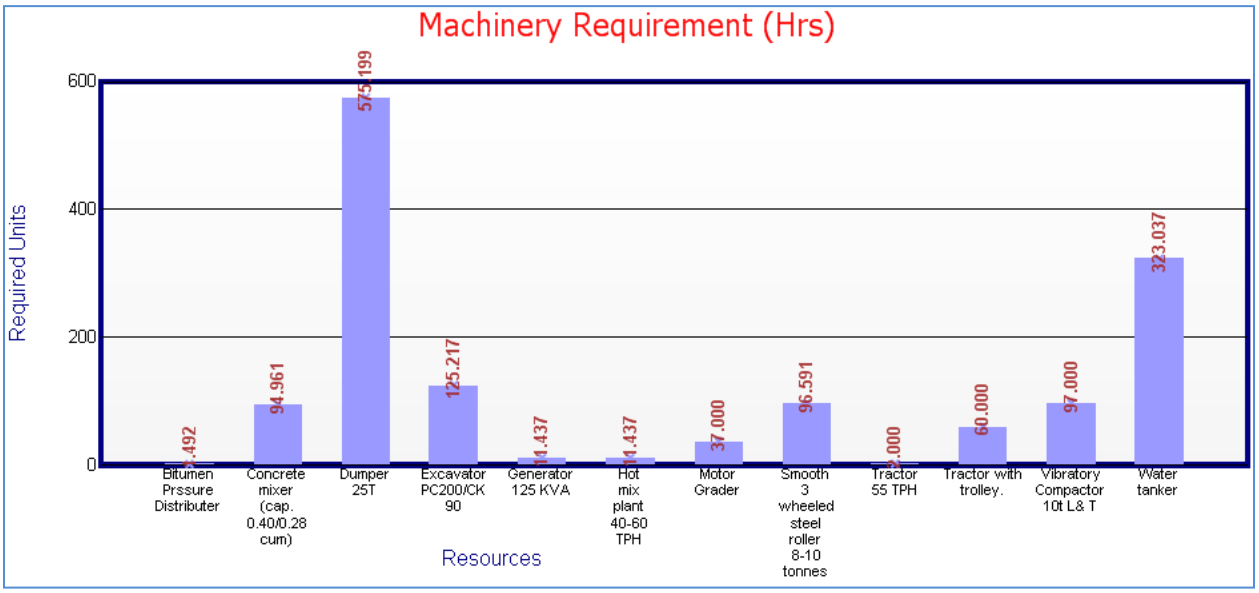
All rates/amounts are in INR

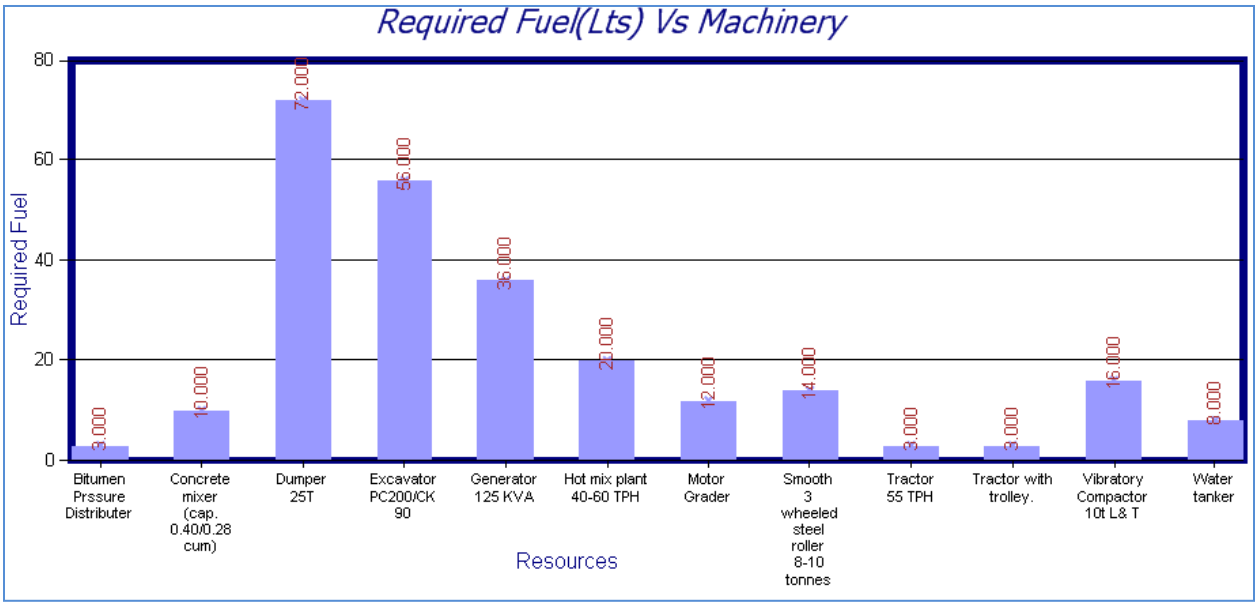
Machinery	Make/Band	Basic Cost	Res Life	Req	Units	Req .Nos	Committed Cost	Peak Nos	Investment Cost	Induction Date	Deinduction Date
Dozer BD50		4,800,000.00	10,000.00	1,360.00	HR.	0.14	652,800.00	34.00	163,200,000.00	1/7/2013	6/7/2013
Tractor 55 TPH		750,000.00	10,000.00	37,340.82	Hr.	3.73	2,800,561.75	289.00	216,750,000.00	1/7/2013	6/7/2013
Loader 0.32 cu.m Front End		1,300,000.00	10,000.00	8,988.56	HR.	0.90	1,168,512.19	51.00	66,300,000.00	1/7/2013	6/7/2013
Compressor 250 cfm		823,600.00	10,000.00	2,396.67	HR.	0.24	197,389.47	56.00	46,121,600.00	1/7/2013	6/7/2013
Jack hammer water flush656 4W		40,000.00	1,000.00	4,816.67	HR.	4.82	192,666.67	112.00	4,480,000.00	1/7/2013	6/7/2013
Dumper 15 t		1,000,000.00	10,000.00	1,828.57	HR.	0.18	182,857.22	22.00	22,000,000.00	1/7/2013	6/7/2013
Excavator PC200/CK 90		4,500,000.00	20,000.00	23,411.01	HR.	1.17	5,267,477.25	274.00	1,233,000,000.00	1/7/2013	6/7/2013
Excavator 20t with Hyd Breaker		5,500,000.00	20,000.00	881.60	HR.	0.04	242,440.00	22.00	121,000,000.00	1/7/2013	6/7/2013
Water tanker		750,000.00	10,000.00	26,528.44	HR.	2.65	1,989,632.90	274.00	205,500,000.00	1/7/2013	6/7/2013
Concrete Mixer Mobile		2,294,000.00	7,000.00	6.40	Hr.	0.00	2,097.37	1.00	2,294,000.00	1/7/2013	6/7/2013
Needle vibrator		50,000.00	5,000.00	10,305.89	HR.	2.06	103,058.88	47.00	2,350,000.00	1/7/2013	6/7/2013
Concrete Pump 46 Cum / hr		2,294,000.00	10,000.00	1,679.93	HR.	0.17	385,375.01	12.00	27,528,000.00	1/7/2013	6/7/2013
Curing apparatus		0.00	1.00	16.88	HR.	16.88	0.00	1.00	0.00	1/7/2013	6/7/2013
Tractor Compressor		500,000.00	10,000.00	36.00	HR.	0.00	1,800.00	1.00	500,000.00	1/7/2013	6/7/2013
Kerb Laying Machine		1,000,000.00	5,000.00	2,094.44	HR.	0.42	418,888.89	35.00	35,000,000.00	1/7/2013	6/7/2013
Tractor 40 TPH		350,000.00	10,000.00	115.29	HR.	0.01	4,035.29	3.00	1,050,000.00	1/7/2013	6/7/2013
Bitumen boiler oil feed		200,000.00	2,000.00	115.29	HR.	0.06	11,529.41	3.00	600,000.00	1/7/2013	6/7/2013
Dumper 10 t		800,000.00	10,000.00	540.00	HR.	0.05	43,200.00	14.00	11,200,000.00	1/7/2013	6/7/2013
							61,777,513.95		**8,237,429,700.00**		

Machinery Mobilization Report, dated 7/1/2013 2 of 2

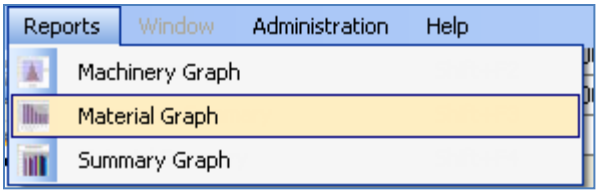
12.10 Machinery Graph

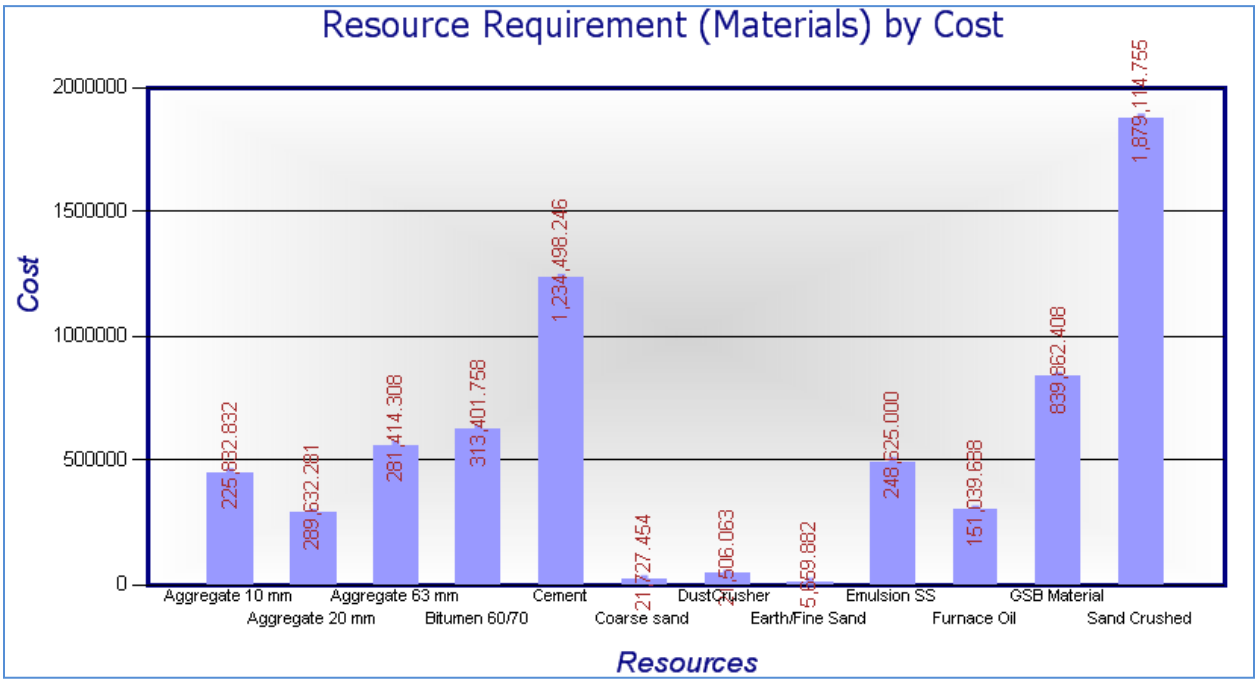


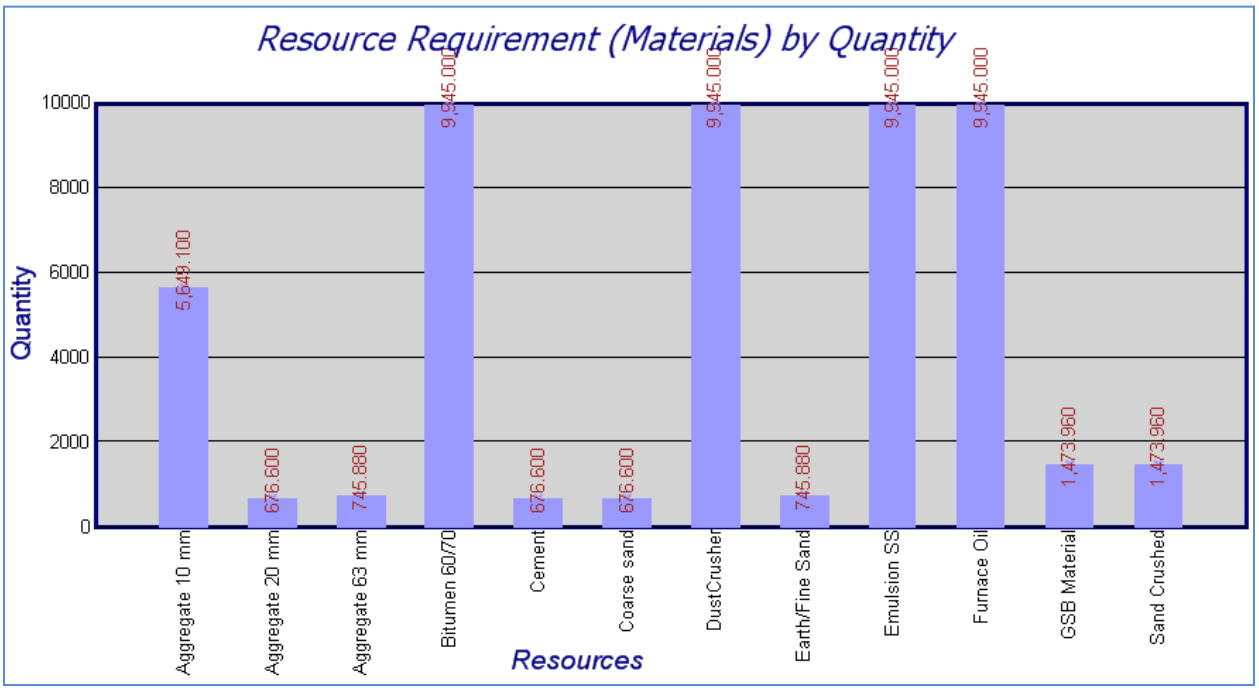




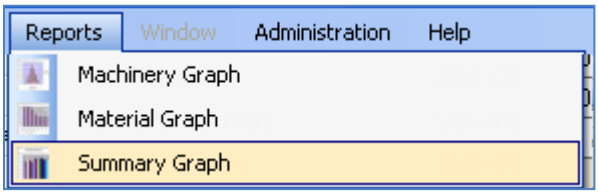
12.11 Material Graph

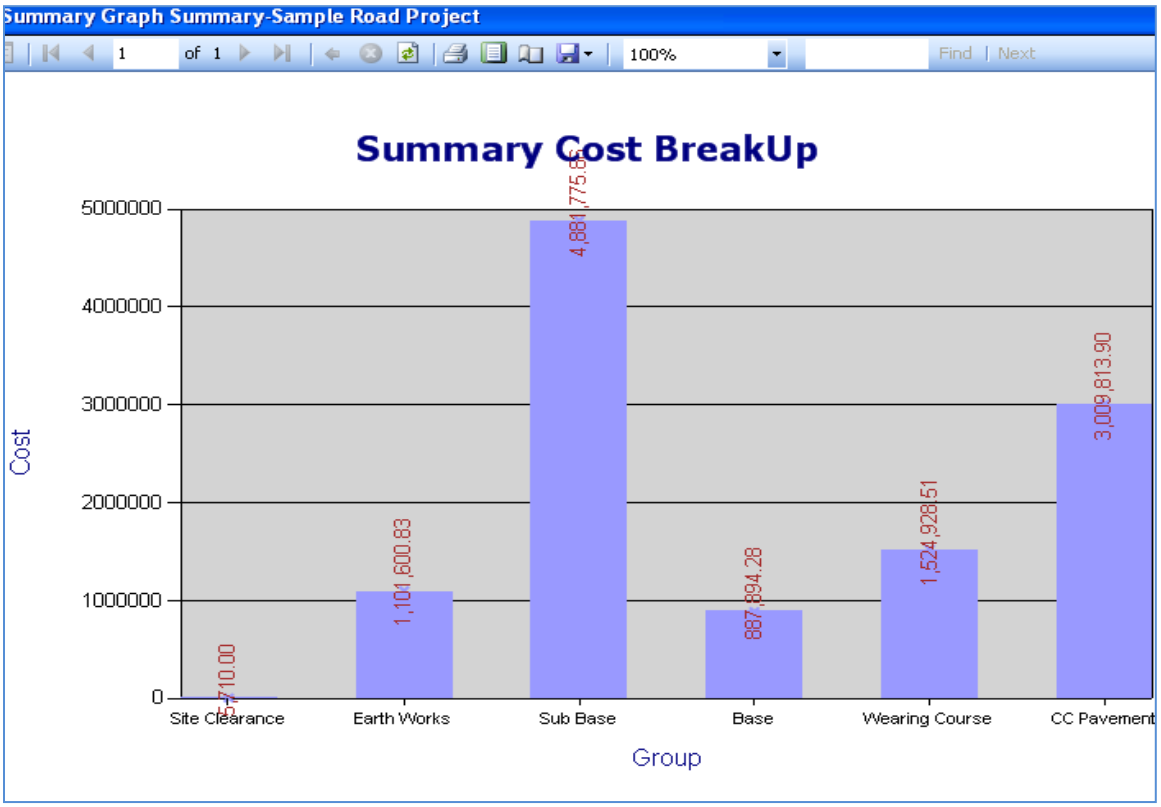



Resource Requirement (Materials) by Cost
Cost
2000000
1500000
1000000
500000
0
225,832.832
289,632.281
281,414.308
313,401.758
1,234,498.246
21,727.454
(4,506.063)
5,869.882
248,525.000
151,039.638
839,862.408
1,879,114.755
Aggregate 10 mm
Aggregate 20 mm
Aggregate 63 mm
Bitumen 60/70
Cement
Coarse sand
DustCrusher
Earth/Fine Sand
Emulsion SS
Furnace Oil
GSB Material
Sand Crushed
Resources

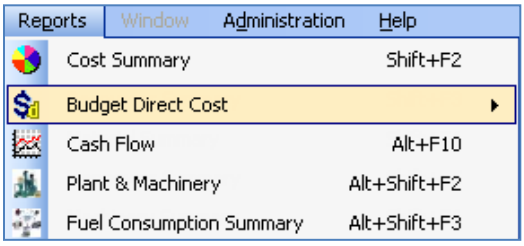

Resource Requirement (Materials) by Quantity
Quantity
10000
8000
6000
4000
2000
0
5,649.100
676.600
745.880
9,945.000
676.600
676.600
9,945.000
745.880
9,945.000
9,945.000
1,473.960
1,473.960
Aggregate 10 mm
Aggregate 20 mm
Aggregate 63 mm
Bitumen 60/70
Cement
Coarse sand
DustCrusher
Earth/Fine Sand
Emulsion SS
Furnace Oil
GSB Material
Sand Crushed
Resources

12.12 Summary Graphs





12.13 Direct Cost

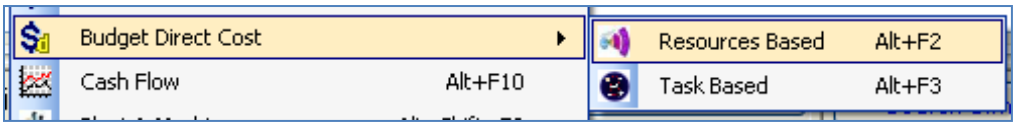


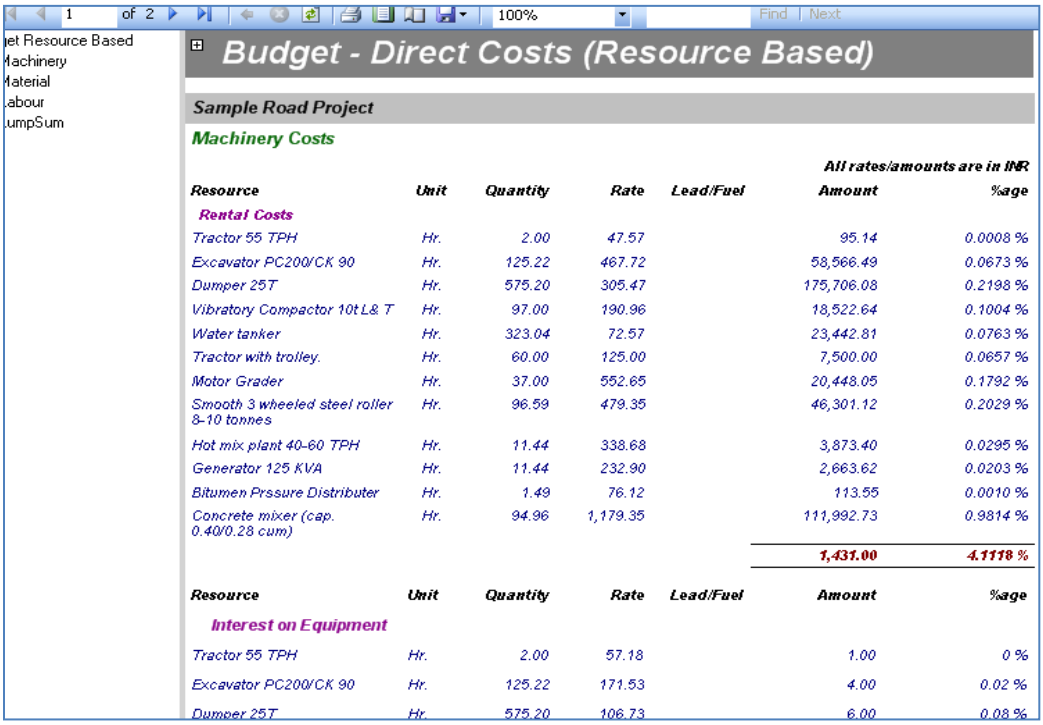
207. Cost associated with material resources consumption, running and rentals of machinery and wages of labour in performing all Tasks items can be seen in the report. The report can either be viewed in task based or resource based.

208. **Direct Cost:** Costs associated with consumption, running and rentals of all resources in performing all Tasks items. These costs get spent as the tasks progress

209. Direct costs can be viewed in Resource and Task based views. Resource based view presents budgets in broad categories of market direct purchases, machinery rentals, transportation costs, fuel costs etc., where as task based view show costs for each task. Resource based budget is useful by accounting department to club similar expenses head wise.

12.13.1 Resource Based





1 of 2 100% Find Next

et Resource Based
Machinery
Material
Labour
LumpSum

Budget - Direct Costs (Resource Based)

Sample Road Project

Machinery Costs

All rates/amounts are in INR

Resource	Unit	Quantity	Rate	Lead/Fuel	Amount	%age
Rental Costs						
Tractor 55 TPH	Hr.	2.00	47.57		95.14	0.0008 %
Excavator PC200/CK 90	Hr.	125.22	467.72		58,566.49	0.0673 %
Dumper 25T	Hr.	575.20	305.47		175,706.08	0.2198 %
Vibratory Compactor 10t L& T	Hr.	97.00	190.96		18,522.64	0.1004 %
Water tanker	Hr.	323.04	72.57		23,442.81	0.0763 %
Tractor with trolley.	Hr.	60.00	125.00		7,500.00	0.0657 %
Motor Grader	Hr.	37.00	552.65		20,448.05	0.1792 %
Smooth 3 wheeled steel roller 8-10 tonnes	Hr.	96.59	479.35		46,301.12	0.2029 %
Hot mix plant 40-60 TPH	Hr.	11.44	338.68		3,873.40	0.0295 %
Generator 125 KVA	Hr.	11.44	232.90		2,663.62	0.0203 %
Bitumen Prssure Distributer	Hr.	1.49	76.12		113.55	0.0010 %
Concrete mixer (cap. 0.40/0.28 cum)	Hr.	94.96	1,179.35		111,992.73	0.9814 %
					1,431.00	4.1118 %

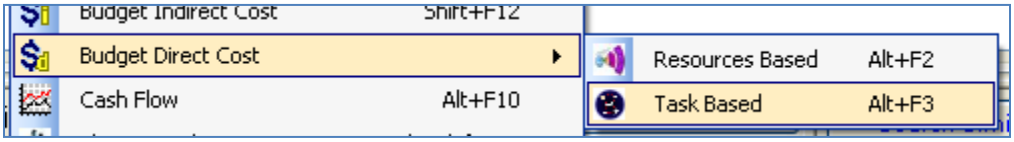
Resource	Unit	Quantity	Rate	Lead/Fuel	Amount	%age
Interest on Equipment						
Tractor 55 TPH	Hr.	2.00	57.18		1.00	0 %
Excavator PC200/CK 90	Hr.	125.22	171.53		4.00	0.02 %
Dumper 25T	Hr.	575.20	106.73		6.00	0.08 %

Resource	Unit	Quantity	Rate	Lead/Fuel	Amount	%age
Transportation Costs						
GSB Material	tonne	2,269.90	4.00	120.00	1,089,551.23	9.5476 %
Sand Crushed	cum.	2,147.56	0.15	0.00	0.00	0 %
Aggregate 63 mm	Cum.	938.05	3.23	100.00	302,989.41	2.6551 %
Earth/Fine Sand	Cum.	226.40	0.00	100.00	0.00	0 %
Emulsion SS	Tonne.	6.22	0.00	0.00	0.00	0 %
Aggregate 10 mm	Cum.	836.42	3.50	100.00	292,746.26	2.5653 %
Bitumen 60/70	Kg	6,964.48	0.00	0.00	0.00	0 %
DustCrusher	Cum.	215.06	3.50	100.00	75,271.22	0.6596 %
Furnace Oil	Litre.	3,356.44	0.00	0.00	0.00	0 %
Cement	tonne	246.90	4.00	10.00	9,875.99	0.0865 %
Aggregate 20 mm	Cum.	579.26	3.50	100.00	202,742.60	1.7766 %
Coarse sand	cum	408.33	1.00	1.00	408.33	0.0036 %
					1,973,585.04	**17.2944 %**

Resource	Unit	Quantity	Rate	Lead/Fuel	Amount	%age
Man Power Wages						
Labour charges for GSB Laying	Cum	1,473.96	18.00		26,531.28	0.2325%
UnSkilled	Shift	9.66	200.00		1,931.00	0.0169%
Skilled 1st	Day	3.85	300.00		1,156.11	0.0101%
					29,618.39	**0.2595%**

12.13.2 Task Based

210. Costs associated with consumption, running and rentals of all resources in performing all Tasks items. These costs get spent as the tasks progress. Direct costs can be viewed in Resource and Task based views. Task based view show costs for each task.



get: Direct Costs(Task Based)-Sample Road Project

1 of 3 100% Find | Next

get Task Based
Site Clearance
C&G
Earth Works
EW Excavation
Emb Borrow 1000m
Sub Grade 1000m
Sub Base
GSB-2
Base
WBM-2
WBM-3
Wearing Course
Prime Coat
Tack Coat
Premix Carpet 20mm
Seal Coat
CC Pavement
CC M30

Budget - Direct Costs(Task Based)

All rates/amounts are in INR

Site Clearance

1 C&G — Analysis for 1.000 Hectare — 2.000 Hectare

	Unit	Rate	Coefficient	Lead	Ld.Rate	Fuel/Hr	Cost Rate	Amount	%age
Machinery									
Tractor 55 TPH	Hr.	125.00	1.00	0.00	0.00	3.00	284.00	568.00	0.0050%
						Total :	284.00	568.00	0.0050%
LumpSum									
C&G Charges	Hectare	2,000.00	1.00	0.00	0.00	0.00	2,000.00	4,000.00	0.0351%
						Total :	2,000.00	4,000.00	0.0351%
						C&GTotal :	2,284.00	4,568.00	0.0400%
						Total:		4,568.00	0.04%

Earth Works

2 EW Excavation — Analysis for 100.000 Cum — 1,642.530 Cum

	Unit	Rate	Coefficient	Lead	Ld.Rate	Fuel/Hr	Cost Rate	Amount	%age
Machinery									

Base

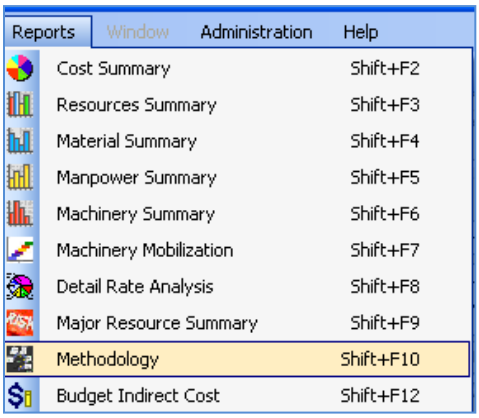
6 WBM-2 — Analysis for 360.000 Cum — 372.940 Cum

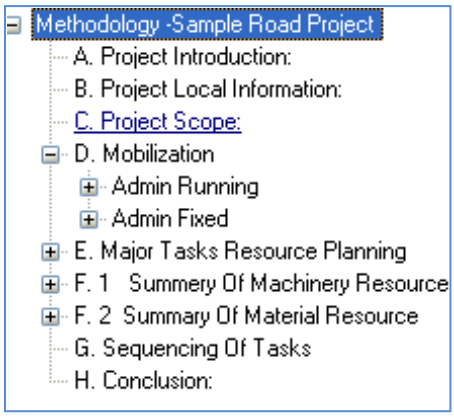
	Unit	Rate	Coefficient	Lead	Ld.Rate	Fuel/Hr	Cost Rate	Amount	%age
Labour									
UnSkilled	Shift	200.00	4.66	0.00	0.00	0.00	932.00	965.50	0.0085%
Skilled 1st	Day	300.00	1.86	0.00	0.00	0.00	558.00	578.06	0.0051%
						Total :	1,490.00	1,543.56	0.0135%
Machinery									
Water tanker	Hr.	150.00	62.28	0.00	0.00	2.00	15,943.68	16,516.77	0.1447%
Smooth 3 wheeled steel roller 8-10 tonnes	Hr.	500.00	46.62	0.00	0.00	7.00	40,606.02	42,065.58	0.3686%
						Total :	56,549.70	58,582.35	0.5134%
Material									
Aggregate 63 mm	Cum.	300.00	452.75	100.00	3.23	0.00	282,063.25	292,201.86	2.5605%
Earth/Fine Sand	Cum.	25.00	109.27	100.00	0.00	0.00	2,731.75	2,829.94	0.0248%
						Total :	284,795.00	295,031.80	2.5853%
						WBM-2Total :	342,834.70	355,157.70	3.1122%

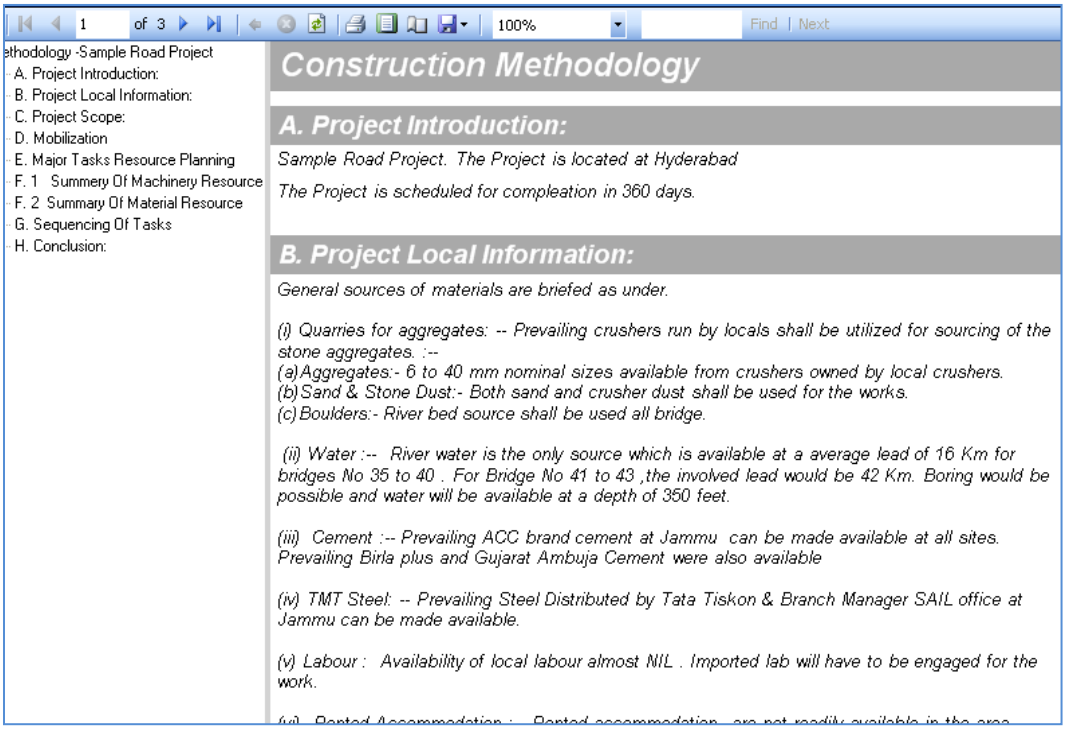
12.14 Methodology

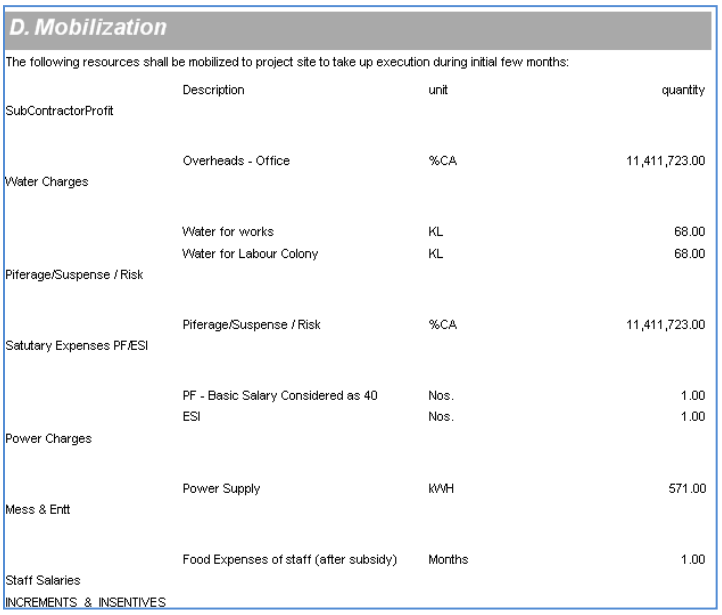
211. The report lists construction methodologies for desired top *n*% items showing broad calculations on proposed equipment deployment and materials to be consumed. Site engineers and

foremen need to understand what has been planned while working out initial costs for implementation.





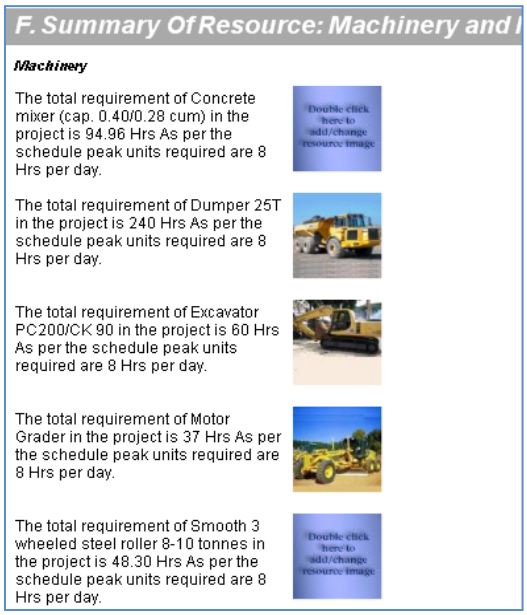




D. Mobilization

The following resources shall be mobilized to project site to take up execution during initial few months:

	Description	unit	quantity
SubContractorProfit			
	Overheads - Office	%CA	11,411,723.00
Water Charges			
	Water for works	KL	68.00
	Water for Labour Colony	KL	68.00
Piferage/Suspense / Risk			
	Piferage/Suspense / Risk	%CA	11,411,723.00
Satutary Expenses PF/ESI			
	PF - Basic Salary Considered as 40	Nos.	1.00
	ESI	Nos.	1.00
Power Charges			
	Power Supply	kWH	571.00
Mess & Entt			
	Food Expenses of staff (after subsidy)	Months	1.00
Staff Salaries			
INCREMENTS & INSENTIVES			



F. Summary Of Resource: Machinery and

Machinery

The total requirement of Concrete mixer (cap. 0.40/0.28 cum) in the project is 94.96 Hrs As per the schedule peak units required are 8 Hrs per day.

The total requirement of Dumper 25T in the project is 240 Hrs As per the schedule peak units required are 8 Hrs per day.

The total requirement of Excavator PC200/CK 90 in the project is 60 Hrs As per the schedule peak units required are 8 Hrs per day.

The total requirement of Motor Grader in the project is 37 Hrs As per the schedule peak units required are 8 Hrs per day.

The total requirement of Smooth 3 wheeled steel roller 8-10 tonnes in the project is 48.30 Hrs As per the schedule peak units required are 8 Hrs per day.

13 System Specifications

13.1 System Requirements

212. The following system software/freeware is required to run this program on windows environment.

a. **Framework**: Minimum .NET Framework 2.0: This shall be installed automatically by the program ProBID+

213. Operating system:

b. **Processor:** Pentium 233 MHz or higher processor with 64 MB RAM is required this is the recommended system.

c. **Windows** 2000 Professional with Service Pack 4 or later or later version like Windows XP/Vista, Windows 7 or Windows 8

d. **Hard disk space:** 300 MB of available hard disk space.

e. **Monitor:** Super VGA (1024X768) or higher resolution monitor.

214. Additional requirement for LAN edition:

f. Microsoft Windows XP Professional or Windows XP Home on a computer with a Pentium III processor or later Versions 128 MB of RAM.

g. **SQL Server** 2005 Express edition.

13.2 ProBID+ specifications

215. The following specifications and limits are supported when you run ProBID+ on Microsoft Windows 2000 Professional SP3 or Windows XP, although actual limits and performance speed depend on your computer's configuration. Note that out of memory errors may occur before you reach the listed limits.

Attribute	Maximum
Task Item or Tasks Items per project file	1 million
Resources per project	1 million
Resource units per Assignment	60,000,000 units or 6,000,000,000%
Task No levels per project	1
Cost value in a currency field	999,999,999,999.99
Assignment work values for:	
Fixed material Assignment	60,000,000 units
Earliest date allowed for calculation	January 1, 1984
Latest date allowed for calculation	December 31, 2049
Characters in a Task field	50
Characters in a Outline field	25
Characters in a Unit field	25
Characters in a Description field	1000
Characters in a Methodology field	1000
Digits in a number field	999,999,999,999.99

14 Program Accessibility

14.1 Accessing F1 enabled help

216. Program comes with a comprehensive F1 enabled help. While working in any form, if user needs to know how the feature works, a simple press of F1 key would pop up related help explanation. Apart from this, many features and commands are available directly from the keyboard. One can view and print lists of all available shortcut keys (shortcut key: A function key or key combination, such as F5 or CTRL+A, that you use to carry out a menu command. In contrast, an access key is a key combination, such as ALT+F, that moves the focus to a menu, command, or control).

14.2 Keyboard shortcuts for using the Help

14.2.1.1 The Help window displays topics and other Help contents.

217. Many features and commands are available directly from the keyboard. You can view and print lists of all available shortcut keys (shortcut key: A function key or key combination, such as F5 or CTRL+A, that you use to carry out a menu command. In contrast, an access key is a key combination, such as ALT+F, that moves the focus to a menu, command, or control.)

14.2.1.2 Analyze Form

i. F1 - Display the context Help.

ii. Tab - Select the next item in the relevant Table of Contents pane.

iii. Shift + Tab - Select the previous item in the relevant Table of Contents pane.

iv. Enter - Perform the action for the selected item.

14.2.1.3 Menu

14.2.1.3.1 File (Alt + F)

i. Ctrl + N- New Application Start (Alt + F+N)

ii. Ctrl + O – Application Open (Alt + F+O)

iii. Alt + X – Close Application (Alt + F+C)

iv. Ctrl + S – Save (Alt + F+S)

v. Ctrl + Q - Quit (Alt + F+Q)

14.2.1.3.2 View (Alt + V)

i. F4 - Focus Tree view for navigating (Alt + V + T)

ii. F7 - Focus Task table for editing (Alt + V + S)

iii. F8 - Focus Assignment table for editing (Alt + V + A)

iv. F9 - Focus Resource table for editing (Alt + V + R)

14.2.1.3.3 Records (Alt + C)

i. Ctrl +Up Arrow - Move back to the previous Task Item pane (Alt + C + F)

ii. Ctrl + Left Arrow - Move to the first Task Item (Alt + C + V)

iii. Ctrl +Right Arrow - Move to the last Task Item (Alt + C + X)

iv. Ctrl +Down Arrow - Move forward to the next Task Item pane(Alt + C + S)

v. F5 - Refresh (Alt + C + R)

14.2.1.3.4 Tools (Alt + O)

i. Ctrl + 1 – Calculator

ii. Ctrl + 2 – Lead Calculator (Alt + O + L)

iii. Ctrl + 3 – Unit Converter (Alt + O + U)

iv. Ctrl + 4 – Steel Table (Alt + O + S)

v. Ctrl + 5 – Area Calculator (Alt + O + A)

vi. Ctrl + 6 – Cut Fill Volume Balancing (Alt + O + E)

vii. Ctrl + 7 – Output Calculator (Alt + O + O)

viii. Ctrl + 8 – Carriage Calculator (Alt + O + C)

ix. Ctrl + 9 – Rent Calculator (Alt + O + R)

x. Alt + F11 – Search Similar Task (Alt + O + T)

14.2.1.3.5 Projects (Alt + J)

i. Alt + 1 – Project Info (Alt + J + I)

ii. Alt + 2 – Options (Alt + J + O)

iii. Alt + 3 – Budget (Alt + J + B)

iv. Alt + 4 – Export to MS Project (Alt + J + E)

v. Alt + 5 – From MS Project (Alt + J + S + F)

vi. Alt + 6 – From MS Project (Alt + J + S + F)

vii. Alt + 7 – Split MSP Tasks (Alt + J + P)

14.2.1.3.6 Reports (Alt + P)

i. Shift + F2 – Cost Summary

ii. Shift + F3 – Resource Summary

iii. Shift + F4 – Material Summary

iv. Shift + F5 – Manpower Summary

v. Shift + F6 – Machinery Summary

vi. Shift + F7 – Machinery Mobilization

vii. Shift + F8 – Details RA

viii. Shift + F9 – Risk Analysis

ix. Shift + F10 – Methodology

x. Shift + F11 – Tender Price Recommendation

xi. Shift + F12 – Budget Indirect Cost

xii. Shift + Alt +F2– Plant and Machinery Report

xiii. Shift + Alt + F3 – Fuel Consumption Summary

xiv. Alt + F2 – Resource Based

xv. Alt + F3 – Task Based

xvi. Alt + F10 – Cash Flow

xvii. Alt + F5 – Cost Summary (Analyze with Excel)

14.2.1.3.7 Help (Alt + E)

i. F1 - Display the context Help.

ii. Alt + F11 – Search Similar Task (Alt + E + N)

14.2.1.4 Build Form

i. Activity Search: It helps to search the required Task alphabetically.

ii. Alt + A (Add) - It helps to add the selected Task to the right side of the Build Form.

iii. Alt + R (Remove) - It helps to remove the unwanted Task from right side.

iv. Alt + U (Move up) - It helps to Move up the highlighted Task among them.

v. Alt + W (Move down) - It helps to Move Down the highlighted Task among them.

vi. Alt + B - Go to Analyzer

14.2.1.5 Project Details Form (Alt + 1)

i. Ctrl + Tab – Tab Change

ii. Alt + B – Browse Path

iii. Alt + C – Close

14.2.1.6 Option (Alt + 2)

i. Ctrl + Tab – tab Change

ii. Alt + A – Apply Project changes to Project

iii. Alt + C – Close

iv. Alt + V converter in Current Tab

14.2.1.7 Budget Form (Alt +3)

i. Alt + A – Add New Resource

ii. Alt + A – It allows New row in the Budget Grid Form

iii. Alt + C – To Get the Window Calculator

iv. Alt + X – Save and Exit Budget Form

v. Alt + F4- Closed Budget Form

14.2.1.8 Cash Flow (Alt + F10)

i. Alt + G – Generate Cash Flow

ii. Alt + C – Close

The Help window displays topics and other Help contents.

15 Customizing Environment

For better visibility and work space convenience user may customize the interface as per the following procedure

15.1 Show or hide the Tree View

218. The Tree View displays list of Tasks Items You can click an icon to display/hide the view.

219. On the View menu, click Tree View to get focus on it.

15.2 Customize columns using the mouse

220. To change a column's width.

221. Position the pointer on the right border of the column heading whose width you want to change, and then drag the border to the left to decrease or right to increase the column width.

15.3 About Menus and Toolbars

222. A menu displays a list of commands. Some of these commands have images next to them so you can quickly associate the command with the image. Most menu items are located on the tool bar, which is located at top of the screen.

15.4 Show or hide a toolbar

223. Show a toolbar: Go to view menu, and then click the toolbar you want to show.

224. Hide a toolbar: Go to view menu, and then click the toolbar you want to hide.

16 Glossary used by program

Terminology with Alphabet 'A'

a. **Add New Resource:** New Resources can be added by selecting Resources in Administration Menu Bar.

b. **Add New Tasks:** Click administrating task of the Task enter your password and submit to the server. This enables you to create any new Task which is not available in date base.

c. **Admin Fixed:** Administrative expenses which are fixed in executing a project. These costs do not depend on the duration of the project.

d. **Admin Fixed duration:** A standard duration setting for use by the ProBID+ during export of Admin Fixed costs as Task to MS Project.

e. **Admin Running:** Administrative expenses that are spent with the duration while execution of a project. These costs depend on the duration of the project and increase with the increase of duration.

f. **Admin Running duration:** ProBID+ assumes duration of this Task as equal to duration of the project.

g. **Amount:** The product of Rate and Quantity.

h. **Analyze with Excel:** At times user may like to use certain features of MS Excel to forecast certain price patterns or comparisons with previous rates quoted in some other projects and/or reworking on certain items that may necessitate playing /analyzing with data.

i. **Analyzer form:** The main work platform to work on Tasks Items by assigning resources, determining the unit rate, etc

j. **Assignment:** Consumption pattern of resources while performing a Task item to achieve the Target Qty in unit duration to arrive Rate.

k. **Assignment Table:** The table for assigning resources to a Task item to perform a Task item.

l. **Assignment Table Remarks:** Text description to show justification as why the assignment for a resource is done.

Terminology with Alphabet 'B

a. **Basic Cost:** Cost of the machinery resource when outright purchase including all taxes and setup/erection.

b. **Budget:** The proposed expenditure and its pattern in execution of a project.

Terminology with Alphabet 'C'

a. **Calculated Rent:** Usage rate of machinery per hour including interest and maintenance costs

b. **Carriage Calculator:** A tool used to work out costs of transportation of materials from quarry source to the project site. The tool is applied for dumpers, tippers, trucks and trailers used in transporting materials.

c. **Chainage:** Defined as the point distance of in the project length of spread.

d. **Client Address:** The principal place of business of the Employer for regular correspondence.

e. **Client/Employer**: The Owner who invites the bids from prospective bidders to build the project or create a public or private facility.

f. **Coeff. /1000 Million:** Certain standard set of consumption pattern to perform a project worth Rs 100 Cr or Rs 1 billion for the ProBID+ to prepare a proportional budget for the project.

g. **Cost Summary:** Summary of costs of all Tasks items.

Terminology with Alphabet 'D'

a. **Date of Start:** Likely date of start of the project for drawing project scheduling.

b. **Defect Liability Period:** The period defined in the tender documents by the Employer where a defect when occurs following completion of project the contractor is liable for restoration or repair.

c. **Depreciation Component:** A work resource like Machine has certain balance residual value after achievement of its viable life. The cost of the machine that can be adjusted or debited to the projects after deducting remaining dead costs is depreciation constant.

d. **Detailed RA:** Item wise detailed rate analysis showing each resource costs.

e. **Direct Cost:** Costs associated with consumption, running and rentals of all resources in performing all Tasks items. These costs get spent as the tasks progress.

Terminology with Alphabet 'E'

a. **Equipment Life (Years):** Normal Equipment life in years that a machine achieves its life in hours to return purchase and interest costs before it becomes unviable.

Terminology with Alphabet 'F'

a. **Factor (%):** This is a depreciating factor or Percentage usage of non-consumable indirect resource which is not fully consumable in a project. For example if we buy a new laboratory and suppose this can perform two projects we set the factor to 50%. It also represents fraction of project duration in which an indirect resource is used. For example when a safety officer is required for 85% of the project duration then we set the factor at 85%.

b. **Fixed Lead:** An offset distance of a material quarry/source away from a particular project chainage point

Terminology with Alphabet 'G'

a. **Get%:** The percentage cost of a Task Item with reference to the whole cost of the project.

b. **Group:** Group of Tasks items or Section of a Standard Specifications to which the tasks belong in a project.

Terminology with Alphabet 'I'

a. **Indirect Cost:** The administrative costs that are associated for executing a project. These costs cannot be attributable to direct costs of any Tasks.

b. **Interest Rate %:** Yearly interest rate on finance of the machinery. ProBID+ assumes that the machinery resources assigned to tasks have a calculated rental value for comparison to market rate or standard rate per hour of usage. The calculated rental value includes interest component on an average market depreciation/interest rate apart from hourly owned cost.

Terminology with Alphabet 'J'

a. **JV-Partner:** A joint venture partner to pool in resources to tender for a project and in case of award to execute the project.

Terminology with Alphabet 'L'

a. **LAN Application:** LAN application facilitates multi user working environment with the server based data based management.

b. **Lag days:** A standard number of days set in Options menu for use by the ProBID+ while exporting data to MS Project. This number is used by the ProBID+ to delay the start of next Task after the previous Task start date.

c. **Lead Calculator:** A tool used to arrive at an average lead of a material resource available for work to enable to determine costs in transporting to the project mid sector.

d. **Lead:** Distance in kilometers of material resources source.

Terminology with Alphabet 'M'

a. **M/Rate:** Standard market rate of a resource or hire charge per hour as prevailing in the market.

b. **Machinery Summary:** Summary of machinery used in a project with usage hours and other machine data for planning and procurement process

c. **Maintenance Component:** This is an average hourly running maintenance expenses of a machine to cater for costs on filters, lubricants and major repairs calculated and fixed as some percentage of the hourly rate. ProBID+ by default assumes this as 30% of the hourly usage rate.

d. **Major Resources Factor:** User can key in a factor/fraction of total Contract Amount above which ProBID+ filters all costs associated for evaluating the risks associated in either escalation or increase/decrease in quality and quantities of resources before bidding a project.

e. **Material Summary:** Summary of materials used in a project with quantities required and their rates adopted in the ProBID+ for planning and procurement process.

f. **Method:** An operational description of a Task with a view to write additional text in the methodology report. This shall supplement auto generated text by the ProBID+.

g. **Methodology:** A narrative description of major Tasks Items that are undertaken in executing a project. The manner of description depends on how a task is analyzed by setting a Target Quantity to be executed in a cycle time operation. The whole task scope of work involved in the project is also explained with set of resources. The description facilitates easy comprehension as to how to handle a Task item during execution in tune with the costs allocated.

h. **Mobilization duration:** A standard duration for setting ProBID+ during export of Admin Fixed items to MS Project.

Terminology with Alphabet 'O'

a. **Operating Profit %:** Targeted Contractors Profit component while bidding a project.

b. **Operating Profit duration:** ProBID+ assumes duration of this Task as equal to duration of the project.

c. **Output Calculator:** A tool used to calculate physical output of a machine based on cycle times associated with the machine.

d. **Overheads:** Operating expenses of the project and the business house, including costs of rent, utilities, interior decoration, and taxes, exclusive of labor and materials etc to operate a project.

Terminology with Alphabet 'P'

a. **ProBID+:** A classic application to procure project bids/tenders.

b. **Project:** A facility to be created by a sponsor or client which is put to tender by him for execution by a prospective contractor.

c. **Project Brief:** Full description of the project intended for use in methodology for presentation of tender documentation.

d. **Project Chainage:** Defined as the point distance of in the project length of spread.

e. **Project Cost:** The aggregate sum proposed to be quoted while bidding a project with an aim to win and subsequently get awarded.

f. **Project Duration:** The number of months required to complete the project as specified by the Employer.

g. **Project Information:** Relevant details of a project listed in a form for use by several reports by ProBID+.

h. **Project Length:** Total length of the project corridor for reaching materials for use by lead calculator

i. **Project Location:** Location of the project where it is intended for construction

Terminology with Alphabet 'Q'

a. **Qty (PC)/PC:** Quantity of an indirect budget item required for executing a project or Project Amount (PC) on which certain rate of expense or tax is applied per Project Amount.

b. **Quantity:** Number of units of a Task item to be executed in a project as provided by the Client/ Employer or assessed by the user. It also represents number of assignment units required for each resource to perform Target Qty of a Task.

c. **Quarry:** The material source from where construction material is mined, extracted or obtained for the project.

Terminology with Alphabet 'R'

a. **Remarks in Assignment table:** Text description to show notes of the user.

b. Rent Calculator to calculate the rental charges to be debited for the project this tool is useful.

c. **Resource Category:** Categorization of resources in to four types; Labour, Lump sum, Material and Machinery.

d. **Resource Make/Brand:** Name of the manufacturer of the particular resource who supplies or manufactures under a brand name or otherwise.

e. **Resource Summary:** Summary of resources including men, material and machinery used in a project for planning and procurement process.

f. **Resource Unit:** Unit of a resource for assignment or use.

g. **Resources Table:** Material or work resource like machine or man power to perform a Task item.

h. **Rs/Km:** Rate per Kilometer in transporting a material resource to the project site.

Terminology with Alphabet 'S'

a. **Search Similar Task:** There are two ways of copying Norms. They are;

b. **From Current Project:** It helps to copy Norms from one Task to the other Task of the Current Project.

c. **From Whole Database:** It helps to copy Norms from a Task of Whole Database to the current Task.

d. **Link to:** Helps to give a Link between two or more Task items which require the same resources. The Link To enables all linked Tasks of the project get updated when a parent Task item is updated.

e. **Special Conditions:** Any special conditions prevailed in the project for reflecting in reports for the top management information at glance.

f. **Split MSP Tasks:** User needs at times to split tasks to temporarily suspend execution during monsoon period or may be required for leveling of resources. It may be difficult to directly split tasks in MSP without this ProBID+ command.

g. **Submission Date:** Date of submission of the tender for use by ProBID+ reports.

h. **Synchronization:** When certain work has already been done in MSP after a previous export process and few more items are to be added to the MSP from the ProBID+ we synchronize both the files for data transfer. ProBID+ also stores data from the MSP for re-export when necessary.

Terminology with Alphabet 'T'

a. **Task:** An identifiable work activity of a project or a WBS of the project to be executed by employing certain resources. All the tasks together of a project represent the whole direct cost of the project.

b. **Task Brief:** An activity short name used in the ProBID+ representing the full task

c. **Task Description:** An activity full name used in the ProBID+ representing the task brief.

d. **Task minimum duration:** A standard number of days set in options menu for the ProBID+ while exporting data to MS Project. ProBID+ sets minimum these days for any project that has less than this number while synchronizing.

e. **Target Qty:** This is an initial quantity of Task units to be assumed by the user to be achieved in unit duration, generally in an hour, and to be performed by a set of resources. For example if we deploy a group of resources like a 20 tonne Excavator, four dumpers, one operator, four drivers and four unskilled laborers on a task of Soil Excavation, then these resources perform

100 Cum per hour. Therefore we term this 100 cum as Target Qty and assign resources in the Assignment / Norms table.

f. **Tender Strategy:** A strategy of the bidder in consideration of the competitors bidding for the project or otherwise for the top management information and company policy.

g. **Tender Submission Date:** Date of submission of the tender for use by ProBID+ reports.

Terminology with Alphabet 'U'

a. **Unit:** Task item units or resource usage units as the case may be.

b. **Units Converter:** A tool used to convert units from one system to another system of measurements.